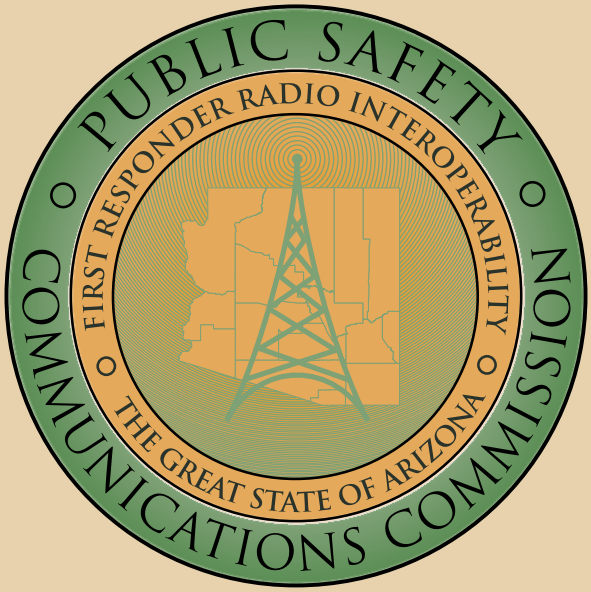

STATE OF ARIZONA
PUBLIC SAFETY COMMUNICATIONS COMMISSION

STATEWIDE COMMUNICATIONS INTEROPERABILITY PLAN

November 29, 2007

Version – DRAFT 1.0

Distribution is limited to United States Department of Homeland Security and to those authorized by the State of Arizona involved in SCIP development and their contract support.

RECORD OF CHANGE

Change Number	Date	Description	Change Date	Signature

EXECUTIVE OVERVIEW

This *Arizona Statewide Communications Interoperability Plan* (SCIP) serves as a reference for all public safety officials by describing the status of statewide interoperable communications and documenting the specific goals and objectives established to improve public safety communications. To ensure this plan has the support of all levels of government, the Public Safety Communications Commission (PSCC), through its working group, the Statewide Interoperability Executive Committee (SIEC), convened a series of regional forums in which it sought the opinions and counsel of all participating levels of government and concerned non-governmental entities to produce this plan, to be used by all first and initial responders in Arizona. The results from these forums, as well as other discussions with public safety officials at the state, local, tribal, and federal levels form the basis for these goals and objectives.

Arizona is a magnificent state, with beautiful landscapes and vistas as well as special needs and requirements. This SCIP will describe the state, its special challenges and opportunities, and how the PSCC and SIEC came together to develop it.

Arizona is the sixth largest state in the United States and shares its southern border with Mexico. Additionally, it borders New Mexico, Colorado, Utah, Nevada, and California. Federal or tribal governments own more than 50 million of the state's over 72 million acres of land. Each bordering state and Mexico has interoperability agreements with Arizona that enable interoperable communications when required.

Because of its unforgiving desert environment, Arizona's critical infrastructure is largely in support of the state's water supply. Other critical infrastructure supports tourism, the state's number one industry. This infrastructure includes communications, banking, energy, and of course, emergency services.

This is the first of what Arizona intends to be several coordinated blueprint planning efforts to provide the opportunity for all levels of government to come together and consolidate their communications needs, based on risk-benefit models projecting evolving future requirements. This collaboration will provide a mechanism for governments to resolve shared issues and assess future common needs. As the process matures, enhanced versions of this plan will include new objectives and scenarios for the future. All governments (state, local, tribal, and federal) and applicable non-governmental entities should accelerate collaborative efforts with a single focus to embrace and maintain the statewide interoperability plan. This will ensure the state implements sustainable team-based solutions with measurable outcomes in cost-effective and highly productive, timely ways, each achieving a better, more efficient means of communications interoperability.

The Arizona SCIP is based on the *Office for Interoperability and Compatibility U.S. Department of Homeland Security Statewide Interoperability Planning Guidebook* (May 2007) criteria. This guide and its criteria help define an actionable way for first responders and their leadership to

leverage interoperability to improve public safety response effectiveness and safety for responders and citizens in emergencies.

Throughout this document, the SAFECOM (now part of the Homeland Security's Office of Emergency Communications [DHS/OEC]) Interoperability Continuum was used as a guide to provide a clear and concise method to determine levels of interoperability, governance, and technology.

Using this process, Arizona has outlined its key components for interoperability.

- The long-range goal for the state is to create a statewide, fully interoperable radio system. The components will include a 700 Megahertz (MHz) Project-25 standards-based system and high-level network connections to regional and existing systems. The state anticipates that many local and tribal entities will partner with them on the 700 MHz component of this system, based on the needs of local and tribal governments to expand their coverage, and their requirement to migrate from wideband technology to narrowband technology pursuant to the Federal Communications Commission's mandate to do so by 2013.
- As this system is in its infancy, a short-term goal for the state is to complete deploying a statewide suite of interoperable radios (Ultra High Frequency (UHF), Very High Frequency (VHF), and 800 MHz) that can be used by any emergency responder whose organization subscribes via a signed Memorandum of Understanding (MOU). This suite of interoperable radios, known as the Arizona Interagency Radio System (AIRS), will remain in place in Arizona long after the 700 MHz component of the statewide interoperability solution is deployed, as there will always be a need for external responders to deploy into Arizona through mutual aid programs in support of Arizona response efforts.
- To make the 700 MHz radio system operational and to assist AIRS, an updated microwave system is required. This microwave system implementation is under way and will be completed over a ten-year period.
- To aid local governments preparing to join the 700 MHz component of the statewide interoperability solution, the state is requesting local governments upgrade their 800 MHz radio systems so when the statewide 700 MHz radios are deployed, each agency will be able to connect with the other participating agencies[1].
- To ensure the state's investment in 700 MHz technology is successful, the state is urging local entities to prepare their existing systems to enable connectivity to, and compatibility with the new network by establishing appropriate minimum specifications for equipment purchased with grant funding.

[1] Newer 800 MHz technology works on both the 700 and 800 MHz public safety radio bands.

- There will always be the need for short-term, immediate assistance for those entities not joining the state system. The idea of joining a statewide system is new for the public safety community; there are unknown cost factors, such as loss of control of a core business requirement for some, as well as a lack of compatibility for partner agencies who may not share the state system's spectrum. Arizona will be developing a system of alternate interconnectivity methodologies to enable local governments choosing to remain with their own radio systems to do so, but still be able to connect with the state system.

DHS/OEC recommends using SAFECOM's Communications Interoperability Continuum (Continuum) as a tool to help the emergency response community and policymakers measure, analyze, and address critical elements required for success as they plan and implement their short- and long-term interoperability efforts. The Arizona SCIP is based on the SAFECOM methodology. The Continuum depicts interoperability's core facets according to the stated needs and challenges of the emergency response community. The interoperability elements defined in the Continuum[2] include governance, Standard Operating Procedures (SOPs), technology, training, exercises, and usage.

While much has been done, there remains much to do in Arizona to reach the desired level of interoperability. The SCIP sustains the momentum created by the PSCC and SIEC planning efforts by maintaining and improving communications to most Arizona's first responders within two years. Additionally, the state is working on completing its statewide microwave system upgrade to enable additional applications on the state system. The state is currently deploying a statewide 700 MHz radio system as a component of its statewide interoperability solution that will connect state agencies and any local, tribal, federal, or authorized non-governmental entities desiring access to a modern communications system. The first phase of this system is a Demonstration Project to be completed in 2008. Governor Janet Napolitano has set a goal for Arizona to have 85% of the state's population covered by interoperable communications systems within two years.

The plan described in this document will achieve this goal, but because the state has significant areas with little population, a Strategic Technology Reserve will be instrumental in bringing communications to those areas that are underserved today and will remain so for the foreseeable future. While not deployed, many of the assets of the Strategic Technology Reserve may be used for day-to-day operations. Some assets are used for large-scale, planned events, like the Super Bowl or other activities in the state. Section 6.1.7 of this document provides detailed project descriptions. This document also identifies interoperability gaps and assists the state in identifying strategies to reduce the gaps in a collaborative and timely manner. As the state plans for the future, there will always be a need for a Strategic Technology Reserve in Arizona.

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[2] http://www.safecomprogram.gov/NR/rdonlyres/65AA8ACF-5FE6-428B-BBD2-7EA4BF44E3A/0/Continuumm080106JR.pdf

Interoperability planning extends well beyond state levels of authority. Interoperable communications is now necessary with bordering states and countries; Arizona currently has an agreement in place with Sonora, Mexico as well as with its bordering states, which are discussed in Section 4.3.1.1. Planned statewide interoperability must be established at the local government level and progress upward, synchronizing partnerships along the way. Through the PSCC, the SIEC, and this plan, local and tribal participation is encouraged and is integral to the state's strategic planning process. Every effort will be made to gain full participation within the state. Additionally, continuing to nurture a close relationship and partnership with the state's commercial communications and non-government entities that are vital for a total state emergency response mandates continued cooperation and coordination in order to meet the total requirements of Arizona's public safety needs.

TABLE OF CONTENTS

TABLE OF FIGURES

LIST OF TABLES

The Federal Department of Homeland Security developed a Compliance Matrix to assist in ensuring that all required preliminary evaluation criteria are met. Table 1 identifies these criteria and serves as a reference to Section, Table and Page number in this report.

Compliance Matrix			
CRITERIA Number		**Section/Table**	**Pages**
1.0	**Background and Preliminary Steps**		
1.1	Provide an overview and background information on the state and its regions. Include geographic and demographic information.	2.4	5-36
1.2	List all agencies and organizations that participated in developing the plan	2.8	37-40
1.3	Identify the point of contact. DHS expects that each state will have a full time interoperability coordinator. The coordinator should not represent or be affiliated with any one particular discipline and should not have to balance the coordinator duties with other responsibilities.	2.9	40
1.4	Describe the communications and interoperability environment of the current emergency response effort.	4, 4.3	48-75, 84-109
1.5	Include a problem definition and possible solutions that addresses the challenges identified in achieving interoperability within the SAFECOM Interoperability Continuum.	4.1.6, 5.3.1	58-59, 125-129
1.6	Identify any Tactical Interoperability Communications Plans in the state.	2.7	33-37
1.7	Set the scope and timeframe of the plan.	2.1	41-42
2.0	**Strategy**		
2.1	Describe the strategic vision, goals, and objectives for improving emergency response interagency wireless communications statewide, including how they connect with existing plans within the state.	5	124-163
2.2	Provide a strategic plan for coordination with neighboring states. If applicable, include a plan for coordination with neighboring countries.	4.3.1.4, 5.3.1.4, 5.4.13, 5.4.14, 5.4.15	103-105, 128, 154-155 156-158,

Compliance Matrix (Continued)			
CRITERIA Number		**Section/Table**	**Pages**
2.3	Provide a strategic plan for addressing data interoperability in addition to voice interoperability.	5.4.11	151
2.4	Describe a strategy for addressing catastrophic loss of communications assets by developing redundancies in the communications plan.	5.4.5, 6.1.7	140-141, 179-181
2.5	Describe how the plan is, or will become compliant with the National Incident Management System (NIMS) and the National Response Plan.	4.3.1 5.5	92-93 159-162
2.6	Describe a strategy for addressing communications interoperability with the safety and security elements of the major transit systems, intercity bus service providers, ports, and passenger rail operations within the state.	5.3.1.8 5.4.9	126-127 148-149
2.7	Describe the process for periodic review and revision of the state plan.	5.6	161-162
3.0	**Methodology**		
3.1	Describe the method by which multi-jurisdictional, multi-disciplinary input was provided from all regions of the state. For an example of a methodology that ensures input from all regions, see the Statewide Communication Interoperability Plan, or SCIP, methodology developed by SAFECOM.	2.8, 3	27-40, 43-47
3.2	Define the processes for continuing to have local input and for building local support of the plan.	3.2, 5.6	47 161-162
3.3	Define how the TIC Plans were incorporated into the statewide plan.	2.7	35-36
3.4	Describe the strategy for implementing all components of the statewide plan.	6-6.6.1.8	164-181
4.0	**Governance**		
4.1	Identify the executive or legislative authority for the governing body of the interoperability effort.	4.2	75-78

Compliance Matrix (Continued)			
CRITERIA Number		**Section/Table**	**Pages**
4.2	Provide an overview of the governance structure that will oversee development and implementation of the plan. Illustrate how it is representative of all the relevant emergency response disciplines and regions in the state.	4.2.1	77-83
4.3	Provide the charter for the governing body, and use the charter to state the principles, roles, responsibilities, and processes.	4.2.1, Figure 20 4.2	77, 75-83
4.4	Identify the members of the governing body and any of its committees. (List them according to the categories recommended for a communications interoperability committee in the All-Inclusive Approach section above.)	4.2.1, 4.2.2	79, 82
4.5	Provide a meeting schedule for the governing body.	4.2.1	79-80
4.6	Describe multi-jurisdictional, multi-disciplinary agreements needed for decision-making and for sharing resources.	4.3.1, 4.5.6	92-105, 121-122
5.0	**Technology**		
5.1	Include a statewide capabilities assessment (or a plan for one) which includes, official communications equipment and related interoperability issues. At a minimum, this should include types of radio systems, data and incident management systems, the manufacturer, and frequency assignments for each major emergency responder organization within the state. Ultimately, more detailed information will be required to complete the documentation of a migration strategy. States may use the Communications Asset Survey and Mapping (CASM) tool to conduct this assessment.	4, 5.3.1.5, 5.3.1.9, 5.3.1.13	84-92, 126, 127, 128
5.2	Describe plans for continuing support of legacy systems, and developing interfaces among disparate systems, while migrating to newer technologies.	4.1.6.3, 4.3, 4.5, 4.5.3.10, 5.3, 5.3.4, 6.1.4, 6.1.6.2	59, 91, 114, 120, 123, 131, 174-176, 178,
5.2.1	Describe the migration plan for moving existing technologies to newly procured technologies.	4.3, 5.4.7, 6.1	87-91, 144-145, 164-172

Compliance Matrix (Continued)			
CRITERIA Number		**Section/Table**	**Pages**
5.2.2	Describe the process that will be used to ensure that new purchases comply with the statewide plan, while generally allowing existing equipment to serve out its useful life.	7.12	185-186
6.0	**Standard Operating Procedures**		
6.1	Include an assessment of local, regional, and state operating procedures that support interoperability.	4.3.1	92-108
6.2	Define the process by which the state, regions, and localities will develop, manage, maintain, upgrade, and communicate SOPs as appropriate.	4.3.1.11	107
6.3	Identify the agencies included in the development of SOPs, and the agencies expected to comply with the SOPs.	4.3.1, Tables 29, 30, 31	94-103
6.4	Demonstrate how the SOPs are NIMS-compliant in terms of the Incident Command System (ICS) and preparedness.	4.3.1.13	108
7.0	**Training and Exercises**		
7.1	Define the process by which the state will develop, manage, maintain and upgrade, or coordinate as appropriate, a statewide training and exercises program.	4.4	109-114
7.2	Describe the process for offering and requiring training and exercises, as well as any certification that will be needed.	4.4.2-4.4.7, 5.4.10	110-114, 150
7.3	Explain how the process ensures that the training is cross-disciplinary.	4.4.7	113-114
8.0	**Usage**		

Compliance Matrix (Continued)			
CRITERIA Number		**Section/Table**	**Pages**
8.1	Describe the plan for ensuring regular usage of the relevant equipment and the SOPs needed to improve interoperability.	4.5	114-120
9.0	**Funding**		
9.1	Identify committed sources of funding, or the process for identifying and securing short- and long-term funding.	7	183-185
9.2	Include a plan for the development of a comprehensive funding strategy. The plan should include a process for identifying ongoing funding sources, anticipated costs, and resources needed for project management and leveraging active projects.	5.3.1.11, 5.4.6	127, 141-142
10.0	**Implementation**		
10.1	Describe the prioritized action plan with short- and long-term goals for achieving the objectives.	6	164-177
10.2	Describe the performance measures that will allow policy makers to track the progress and success of initiatives.	5.3, 5.4, 6.14	124-129, 132-156 174-177
10.3	Describe the plan for educating policy makers and practitioners on interoperability goals and initiatives.	5.3.1.12, 5.7	128, 162-163
10.4	Describe the roles and opportunities for involvement for all local, state, and tribal agencies in the implementation of the statewide plan.	2.6.2, 2.8, 3, 4.2, 5.6	30-32, 37-40, 43-47, 75-83, 161-162
10.5	Establish a plan for identifying, developing, and overseeing operational requirements, SOPs, training, technical solutions, and short- and long-term funding sources.	4.3.1, 5.3.1.4, 5.3.1.10, 5.4.12	92-97, 126, 127, 151-152

Compliance Matrix (Continued)			
CRITERIA Number		**Section/Table**	**Pages**
10.6	Identify a POC responsible for implementing the plan.	6.1.5	177
10.7	Describe critical success factors for implementation of the plan.	6.1.4	174-177
11.0	**PSIC Requirements**		
11.1	Describe how public safety agencies will plan and coordinate, acquire, deploy and train on interoperable communications equipment, software and systems that: 1) utilize reallocated public safety - the public safety spectrum in the 700 MHz frequency band 2) enable operability with communication systems that can utilize reallocated public safety spectrum for radio communications; or 3) otherwise improve or advance the interoperability of public safety communications system that utilize other public safety spectrum bands.	6.1.6	178
11.2	Describe how a Strategic Technology Reserve (STR) will be established and implemented to pre-position or secure interoperable communications in advance for immediate deployment in an emergency or major disaster.	6.1.7	179-181
11.3	Describe how local and tribal government entities' interoperable communications needs have been included in the planning process and how their needs are being addressed	6.1.8	181-182
11.4	Describe how authorized non-governmental organizations' interoperable communications needs have been included in the planning process and how their needs are being addressed (if applicable).	6.1.9	182

Table 1 - COMPLIANCE MATRIX

1. INTRODUCTION

Before the Public Safety Communications Commission (PSCC) was officially established, a group of individuals who believed the state of Arizona should address interoperability as a statewide priority started meeting as an *ad-hoc* community of interest. In July 2004, the Governor and the Legislature formalized this group and created the PSCC under A.R.S. §41-1830.41 and §41-1830.42, whose mission it is to:

- promote the development and use of standards-based radio systems
- capitalize on resource-sharing opportunities
- apply best practices and lessons learned
- provide effective, reliable, and sustainable radio communications among local, county, state, tribal, and federal public safety entities
- build a statewide, interoperable emergency communications infrastructure that will improve emergency response times and increased radio coverage to protect the life and safety of the citizens of Arizona and to protect its critical infrastructure.

The PSCC created the Arizona Statewide Interoperability Executive Committee (SIEC) as suggested by the September 11, 1996 report to the Federal Communications Commission (FCC) by the Public Safety Wireless Advisory Committee (PSWAC) that addressed best practices for providing interoperability among public safety entities. The Arizona SIEC is a five-member PSCC advisory committee representing a broad cross section of the state's public safety officials.

In 2006, the PSCC awarded a contract to Federal Engineering, Inc. to work in concert with the PSCC and the SIEC to design a statewide interoperable radio system for public safety agencies throughout Arizona. Other consulting firms to understand the status of interoperable communications, to identify the needs of the various public safety agencies, and to establish a Concept of Operations for the statewide interoperable radio system going forward, had already done much work. After consideration of these work efforts as well as additional analysis and interaction with state and local public safety officials, a recommendation was made to the PSCC to deploy a 700 MHz standards-based land mobile radio system as part of its overall interoperability solution to be used by state agencies and made available to local, tribal, and federal entities. No entity will be required to join this system in order to share the benefits of statewide interoperability; therefore, this statewide radio system will be designed to interoperate with regional radio systems for entities that do not join the statewide system. The recommendation to use the 700 MHz band was made in part because the band is currently provide an attractive alternative to making large investments that would not necessarily improve an agency's radio coverage.

On April 24, 2007, the PSCC voted to adopt the plan. The PSCC accepted the concept of the statewide radio system for state agencies, with the ability for local and tribal agencies to join, providing the state a clear-channel migration path for all users. In addition, many local, regional, and tribal entities will be required to update their radio systems because of an FCC

mandate to "narrowband[3]" their equipment by 2013. Joining the statewide radio system would participate by using the statewide system or interfacing their system to it. This statewide radio system will become the interoperability solution of choice for the state of Arizona.

The SCIP process began with a high-level plan introduced at a SIEC statewide meeting in July 2007. As the state already had a vision for a statewide interoperable communications system, a first draft of the SCIP was prepared prior to the meeting. Representatives of the Department of Homeland Security/Office of Emergency Communications/Interoperable Communications Technical Assistance Program (ICTAP), reviewed the plan, and facilitated the meeting.

After a series of meetings, and forums this SCIP was approved by the PSCC in an open meeting on November 28, 2007. The timeline used for the SCIP is detailed in Table 2. Details on the methodology of the SCIP are available in Section 3 of this report.

This plan represents the PSCC's short- and long-term goals and strategies to design and implement a radio system to have 85% of the state's population covered by interoperable communications systems within two years.

The SCIP demonstrates Arizona's commitment to its citizens by providing an almost immediate solution to the state's interoperability problem, but also discusses the long-term solution to protect the lives and property of its residents.

[3] The Federal Communications Commission mandated that all radio system operating on spectrum below 512 MHz must narrowband (ensure their radio transmission emissions are within the coherence limitations of their spectrums) or lose their license to operate their radio systems.

Table 2 identifies deliverables and milestones for the SCIP.

Project Timeline	
Deliverables / Milestones	**Dates**
Project Initiation	August 13, 2007
Work with SIEC and PSCC to determine what information is available from information resources and from ICTAP	August 15, 2007
Deliver required information list to the state	August 17, 2007
Gap Analysis and Closure Plan	August 18, 2007
Draft Plan to PSCC	August 25, 2007
Draft Plan to ICTAP	August 31, 2007
Updated preliminary Plan to PSCC	September 19, 2007
SIEC and PSCC open meeting to review Arizona SCIP	September 25, 2007
PSCC approve draft Plan to DHS	September 25, 2007
SIEC and PSCC open meeting to review Arizona SCIP	October 23, 2007
SIEC and PSCC open meeting to review Arizona SCIP	November 20, 2007
PSCC approves Arizona SCIP	November 28, 2007
Deliver Plan to DHS	November 30, 2007
Teleconference Status Reports	Weekly

Table 2 - PROJECT TIMELINE

2. BACKGROUND

2.1. STAKEHOLDERS DRIVING THE STATEWIDE PLANNING INITIATIVE

Throughout this process, the PSCC, SIEC, and their constituent groups have been driving the statewide interoperability effort. Through the PSCC's efforts, the planning has flourished.

2.2. MOMENTUM DRIVING THIS EFFORT

The impetus for this effort began with the PSCC's belief that Arizona's public safety communications needed to become fully interoperable. The PSCC contracted with several consultants to assist them in analyzing the issue. Because of these studies, and concluding independently the PSCC recommended that a statewide 700 MHz standards-based radio interoperability network as part of Arizona's overall interoperability solution was the best course of action for the state. This network would include a statewide digital backbone, high-level network connections to the statewide system, and enable those larger jurisdictions currently using 800 MHz radios to interoperate with the state. Additionally, as AIRS was almost completed, this solution would provide interoperability for those using the appropriate suite of channels of each of the public safety radio bands. Prior to the Public Safety Interoperable Communications (PSIC) program, the state elected to move forward with a Demonstration Project to show how a 700 MHz radio system would create a system enabling interoperability with several of the larger state jurisdictions.

Because of the Governor's desire for interoperability within the state, the PSCC's Demonstration Project is moving forward; the interoperability AIRS suite of channels is being made available to all levels of government creating significant momentum to drive this effort forward.

2.3. STATE BENEFITS FROM THIS PLAN

Arizona will realize several benefits from implementing this plan. The direct benefit comes from implementing an interoperable public safety communications system that will enable a much more efficient and coordinated response during crises. A secondary benefit will be through maturing government-to-government interaction through developing MOUs and coordinating plan implementation. Finally, a joint-technology investment by the state leveraging federal funds makes sense functionally and financially.

2.4. STATE OVERVIEW

2.4.1. GEOGRAPHY - OVERVIEW

The state of Arizona is located in the southwestern United States, is bordered to the south by Mexico, to the east by New Mexico, to the north by Utah, to the north and west by Nevada, and to the west by California. At the northeast corner of the state is "Four Corners," where Colorado is on the opposite corner from Arizona, with New Mexico and Utah in between. Figure 1 is a map of Arizona showing its immediate neighbors.

Arizona measures approximately 400 miles in length, 310 miles in width, and has a total area of roughly 118,000 square miles, making it the sixth largest state in the United States. Arizona has a water area of roughly 364 square miles, making it the third driest state in the U.S. after New Mexico and Wyoming.

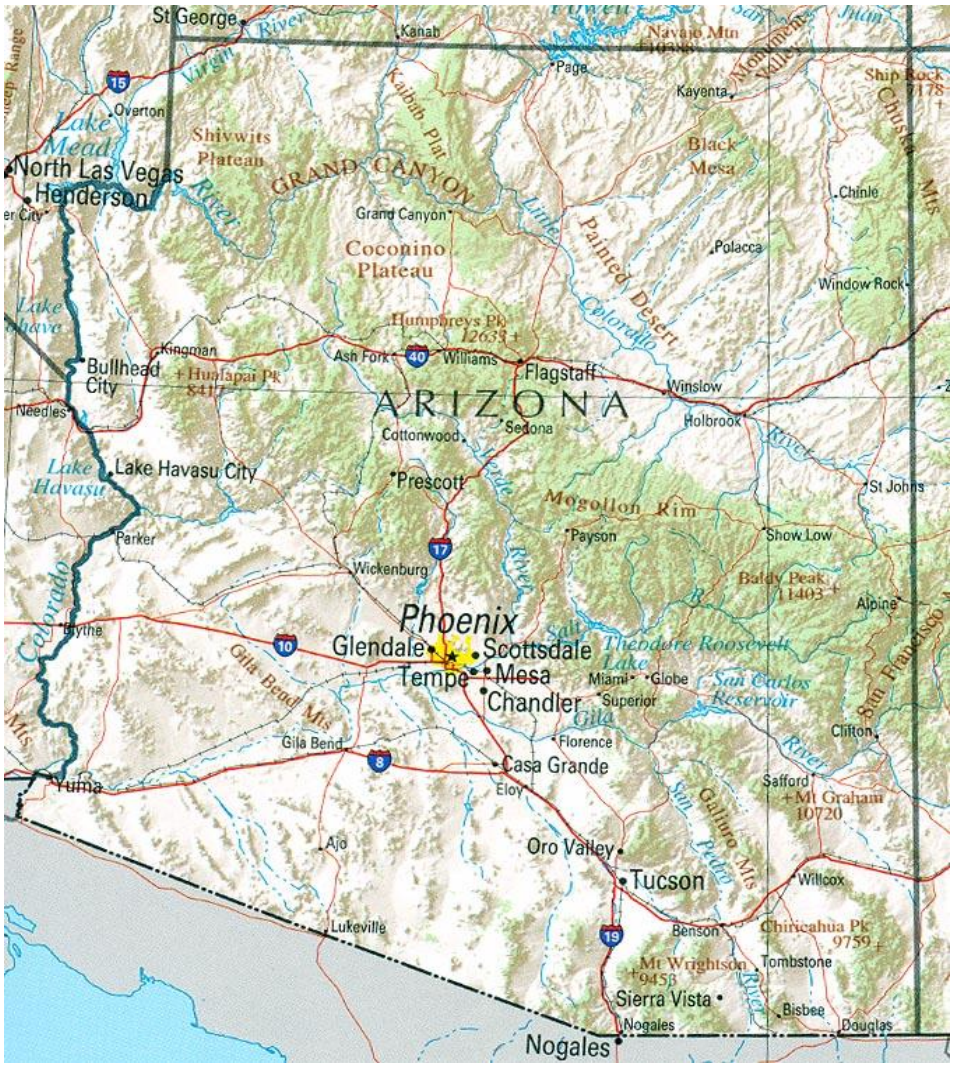

Figure 1 - MAP OF ARIZONA

Arizona's border with Mexico is 389 miles long and is mostly uninhabited. The population distribution of Arizona is discussed below. (Please see Table 3 for Arizona population information.) Private landowners own less than 20 percent of the state. There are six international crossing stations along the border (located at Nogales, Douglas, Lukeville, Naco, Sasabe, and San Luis, Arizona); due to rugged terrain, however, monitoring illegal activity along the entire international border is currently not cost effective and as a result illegal border-crossing activities proliferate.

The state of Arizona has 15 mostly rural counties, as seen in Figure 2. There are three distinct topographical regions in the state: (1) in the northeast is a high plateau with elevations ranging from 5,000 to 7,000 feet; (2) in the southeast and northwest is a mountainous region with elevations ranging from 9,000 to 12,000 feet; and (3) the low mountains occupying the southwest portion of the state. (Additional information about Arizona's Major Geographic Considerations can be found in Section 2.4.6 of this SCIP.)

2.4.2. Demographics

Arizona's population is growing rapidly with Phoenix being one of the fastest-growing cities in the United States. Estimates are that in 2009 Arizona will be home to 6.8 million people, with the Phoenix metropolitan area having a population of 4.1 million and Pima County having a population of 1 million. These two counties populations represent 75 percent of the population of the state. Table 3 outlines Arizona's population by county and growth projections through 2009. Figure 2 shows the county political boundaries.

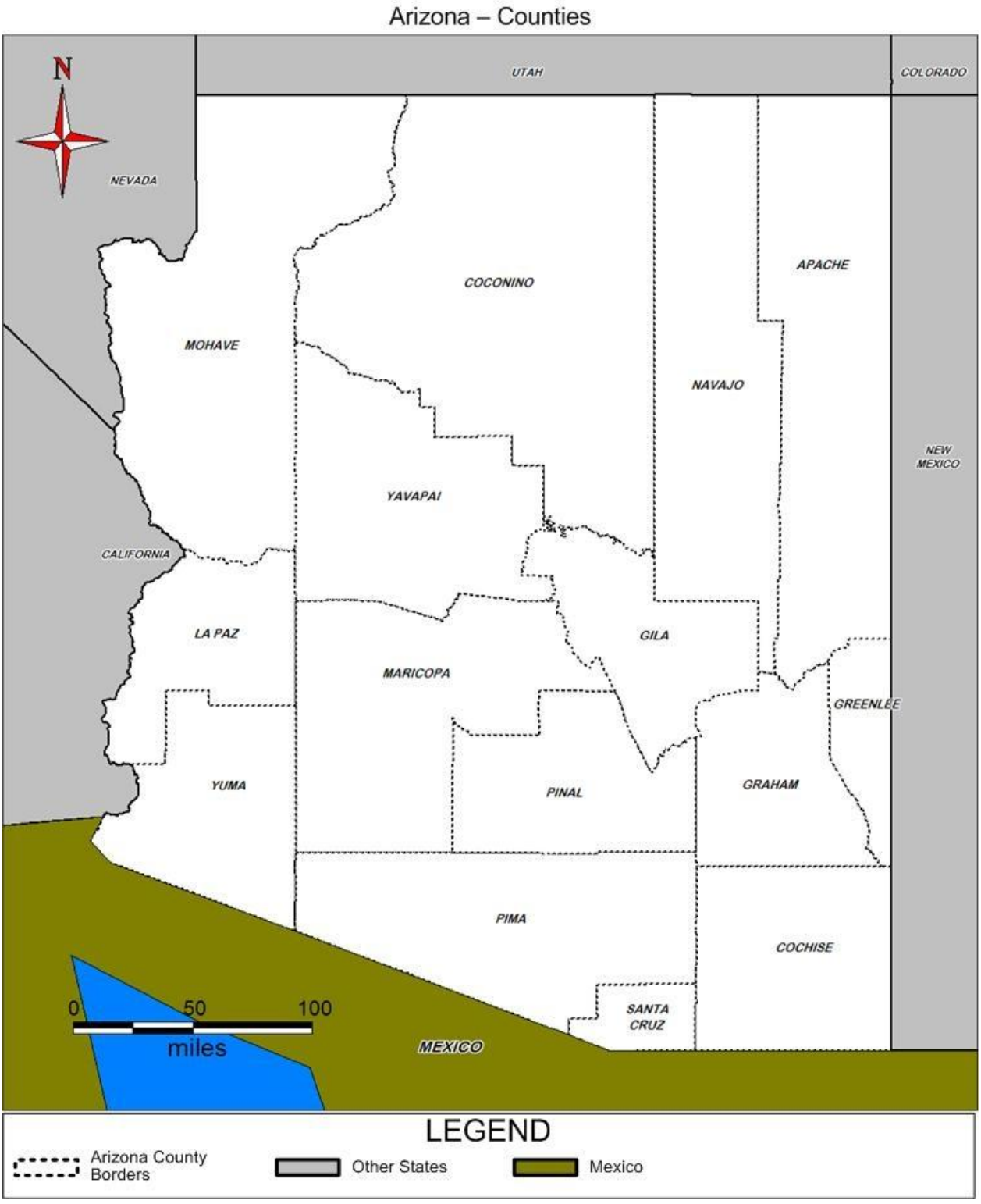

Figure 2 - ARIZONA COUNTIES

As shown in Table 3, Arizona's population is growing rapidly. More than half of the state's population resides in Maricopa County, a designated Urban Area Security Initiative (UASI) area. The state's second UASI area is Pima County, Arizona's second most populated county. In fact, the population of the state's six largest counties accounts for over 85 percent of Arizona's total population. The capital, Phoenix (located in Maricopa County), is one of the largest cities in the United States.

The 2005 Census found that 27 percent of the population were under the age of 18 and 13 percent were 65 years of age or older. Arizona continues to grow rapidly as a leading retirement destination for people with communities like Sun City (near Phoenix) and Green Valley (near Tucson) growing much faster than most cities. As shown in Figure 2, Arizona has 15 counties: Mohave, Coconino, Navajo, Apache, Yavapai, Gila, La Paz, Maricopa, Pinal, Graham, Greenlee, Yuma, Pima, Cochise, and Santa Cruz.

Population of Arizona				
	2006	2007	2008	2009
Arizona	6,239,482	6,432,007	6,622,885	6,812,137
Counties				
Apache	74,691	75,597	76,486	77,361
Cochise	134,789	137,708	140,560	143,346
Coconino	132,826	135,070	137,261	139,388
Gila	55,102	55,769	56,427	57,092
Graham	35,873	36,271	36,666	37,054
Greenlee	8,281	8,259	8,238	8,220
La Paz	21,489	21,779	22,062	22,347
Maricopa	3,764,446	3,879,150	3,992,887	4,105,623
Mohave	194,920	201,693	208,372	214,949
Navajo	112,672	115,331	117,971	120,591
Pima	980,977	1,003,918	1,026,506	1,048,796
Pinal	269,892	293,312	316,899	340,660
Santa Cruz	45,303	46,545	47,777	48,998
Yavapai	212,722	220,170	227,468	234,626
Yuma	195,499	201,435	207,305	213,086

Table 3 - POPULATION SUMMARY, ARIZONA

Tribal Lands in Arizona

Arizona is home to 22 federally recognized tribes (see Table 4, Figure 3). The combined landmass occupied by the tribal nations represents approximately 25 percent (21 million acres) of the state's land. According to the 2000 federal census, the Native American population in Arizona is approximately 250,000. Figure 3 illustrates the location and size of the Tribal lands in the state. Figure 4 illustrates the land occupied by Tribal lands and federal institutions.

Federally Recognized Tribal Nations	
Ak-Chin Indian Community	Hualapai Tribe
Yavapai-Apache Nation	Kaibab-Paiute Tribe
Navajo Nation	Pascua Yaqui Tribe
Cocopah Indian Reservation	Salt River Pima-Maricopa Indian Community
Colorado River Indian Tribes	San Carlos Apache Reservation
White Mountain Apache Tribe	Tohono O'odham Nation
Fort McDowell Yavapai Nation	Tonto Apache Tribe
Fort Mojave Indian Tribe	Yavapai-Prescott Indian Tribe
Gila River Indian Community	Fort Yuma-Quechan Tribe
Havasupai Indian Reservation	San Juan Southern Paiute Tribe
Hopi Tribe	Zuni Tribe

Table 4 - FEDERALLY RECOGNIZED TRIBAL NATIONS IN ARIZONA

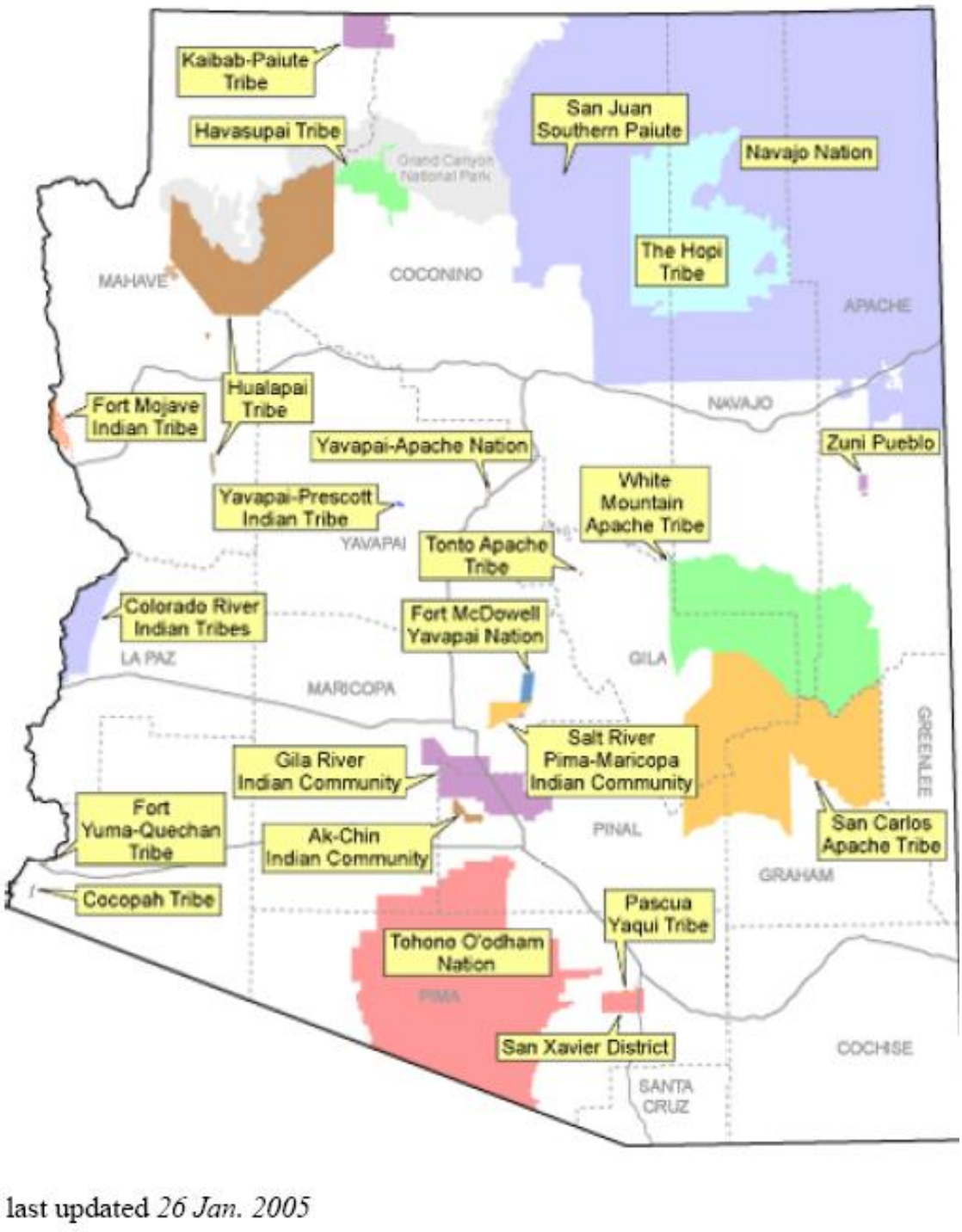

Figure 3 - LANDS OF FEDERALLY RECOGNIZED TRIBES[4]

[4] Arizona Commission of Indian Affairs

Federal Lands

Figure 4 illustrates a significant amount of federal land in Arizona. Of the state's total landmass (72,934,562 acres), the United States Bureau of Land Management, National Forest Service, National Park Service, and Department of Defense maintain over 28,723,148 acres. This makes it imperative to require federal participation in any interoperable radio system deployed in Arizona.

Among the key national military bases in Arizona are:

- Fort Huachuca, home to the US Army Intelligence Center and School
- Luke Air Force Base, home of the 56th Fighter Wing (the only F-16 Fighter pilot training facility)
- Davis-Monthan Air Force Base, home of the 355th Fighter Wing, whose primary mission is to train A-10 pilots and provide close support and forward air control to ground forces worldwide
- Yuma Proving Grounds, where the Department of Defense runs ordinance testing
- Marana Army Heliport, where the US Army conducts both national and international training

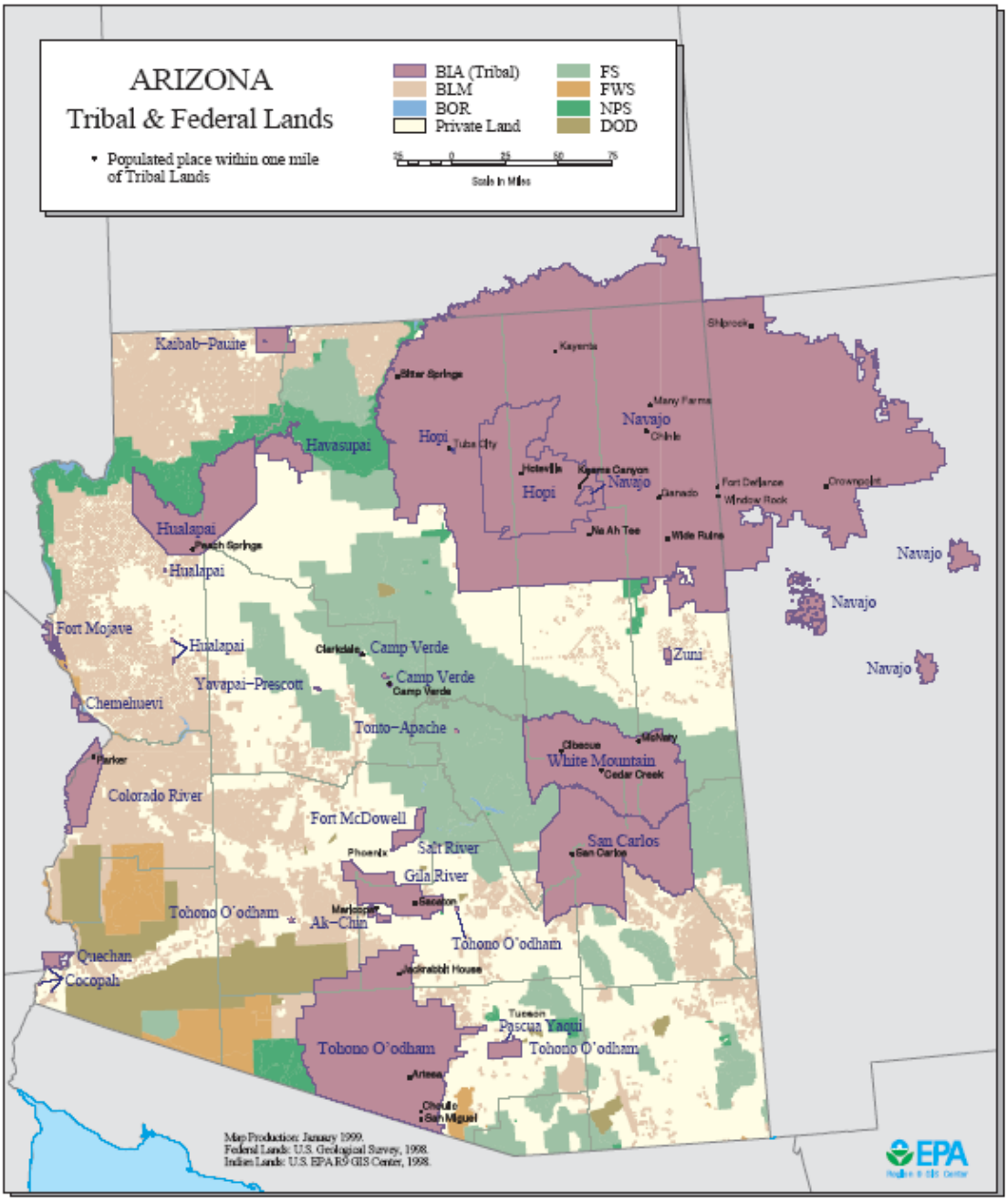

Figure 4 - FEDERAL AND TRIBAL LANDS IN ARIZONA

Table 5 identifies the lands in Arizona in acres by ownership:

Arizona Land Distribution											
County	BLM	Forest	Reservation	National Parks	Local/State Parks	Military	Other	Private	State Trust	Wildlife	Total
Apache	109,972	491,363	4,795,389	164,087			7,698	940,773	668,900		7,178,182
Cochise	390,904	490,740		17,896		107,354	3,154	1,590,285	1,374,479	2,368	3,977,180
Coconino	605,491	3,243,092	4,552,871	779,691		25,752	10,073	1,587,305	1,125,427		11,929,702
Gila	66,386	1,700,171	1,162,222	1,107			309	105,218	31,220		3,066,633
Graham	733,117	380,693	1,080,785			439	1,036	283,109	496,016		2,975,195
Greenlee	160,090	746,981						95,715	172,590		1,175,376
La Paz	1,685,159		232,753		1,621	397,217	1,586	148,608	254,959	169,637	2,891,540
Maricopa	1,631,562	655,026	270,059		100,939	824,639	23,094	1,742,140	649,705	5,056	5,902,220
Mohave	4,777,546	4,694	575,996	1,170,734	4,722	9,967	13,865	1,467,782	565,970	36,097	8,627,373
Navajo	92,960	488,315	4,247,021	22,679			2,565	1,141,423	372,146		6,367,109
Pima	373,786	336,888	2,475,316	411,190	11,191	68,201	7,567	816,920	862,221	514,322	5,877,602
Pinal	374,035	219,017	698,463	2,044	10,527	7,300	43,933	877,256	1,204,930		3,437,505
Santa Cruz	13,518	417,233		9	599		277	298,252	61,597		791,485
Yavapai	605,411	1,984,339	3,101	847	403	257	15,509	1,324,681	1,265,433		5,199,981
Yuma	521,356		7,748			1,411,893	44,160	373,916	191,078	987,328	3,537,479
Total	12,141,293	11,158,552	20,101,724	2,570,284	130,002	2,853,019	174,826	12,793,383	9,296,671	1,714,808	72,934,562

Table 5 - LAND MASS BY GROUP

2.4.3. First Responders

Arizona has approximately 281 first responder agencies, with 15 sheriff's departments, 149 police departments, 117 fire districts, and emergency medical providers. Arizona currently has 15,225 sworn law enforcement officers with an approximate 4.5 percent yearly increase.

2.4.4. Climate

Arizona's climate can be unforgiving, with winter low temperatures in the state's higher elevations often reaching -35° Fahrenheit (F) and summer high temperatures reaching over 120° F or more. The difference between maximum and minimum daily temperatures can be as much as 50 to 60° F during the drier portions of the year. During winter months, daytime temperatures average 70° F, with night temperatures often falling to freezing or slightly below in the lower desert valleys. In the summer, the pine-clad forests in the central part of the state may have afternoon temperatures of 80° F, while overnight temperatures drop to 35° F or 40° F.[5]

[5] *Climate of Arizona*

2.4.5. Critical Infrastructure

Three main areas of concern summarize Arizona's critical infrastructure: water, electricity, and telecommunications. Each of these specific areas depends on the others to support Arizona's standard of living and primary sources of income: tourism, high-tech industries, defense industries and a rising number of retirement communities around the state.

2.4.5.1. Water Supply

Because Arizona is located in an arid region, it relies on a water supply external to its population centers. As a result, the state has over 400 dams, of which 130 are classified as requiring critical infrastructure protection. By this definition, the state believes the failure of one of these assets could result in a high loss of life and/or property within the region.

Making the best use of the surface water when and where it is needed, highly elaborate storage reservoirs (including many of Arizona's largest dams) and delivery systems were constructed throughout the state. The reservoirs on the Colorado, Salt, Verde, Gila, and Agua Fria rivers are among the state's most noteworthy. A threat to any of these reservoirs would present a serious threat to the region. For example, Glen Canyon Dam impounds Lake Powell, which at 25 million acre-feet and has only slightly less volume than Lake Mead.

Hoover Dam is the most notable dam in the state and is a major component of the state's infrastructure because of the lakes, water supply, and hydroelectric production linked to its operation. At 726 feet in height and 1,244 feet in length, it creates the largest fresh water reservoir in the United States. Additionally, as Hoover Dam is known worldwide, and is considered a likely terrorist target.

2.4.5.2. Electricity

As mentioned above, Hoover Dam and many of the 400 other dams throughout the state are also used to generate hydroelectric power. Hoover Dam is a major supplier of electric power to the western grid, which includes the states of Arizona, California, and Nevada.

Arizona is also home to the largest nuclear power generation facility in the United States. The Palo Verde Nuclear Generating Station is on 4,000 acres of land near Wintersburg, about 45 miles west of central Phoenix, and produces over 30,000 Giga-Watt-hours of electricity annually to serve approximately four million people in Phoenix and Southern California. The Nuclear Regulatory Commission recently designated Palo Verde as a high-risk "Category 4" facility, making it the most monitored nuclear power plant in the United States. It is notable that during the Cold War the Soviet Union targeted Palo Verde in its nuclear war planning scenarios.

2.4.5.3. Telecommunications

To support the primary industries of the state, telecommunications is a major component of the infrastructure in Arizona. As tourism depends on the banking and travel industries, telecommunications in turn provides the conduit enabling them to communicate.

According to the Arizona Corporation Commission 2006 report, there are 435 telecommunications companies doing business in Arizona; however, the two largest communications companies are Qwest and AT&T. Both companies have major communications hubs in this state that are critical for the state's economy to remain solvent.

2.4.5.4. Tourism

Arizona's largest industry is tourism and the industries it supports, such as: banking, various service industries, agriculture, electricity, and telecommunications. Each industry has flourished in Arizona recently and there are no signs of the trend slowing. In 2006, tourism and tourism-related industries contributed almost $19 billion to the Arizona economy.

2.4.5.5. High-Tech Industries

Arizona is the home of many high-tech industrial companies' facilities, including Motorola, Intel, Owens Semi-Conductors, etc. They, like those of the tourism marketplace, require that water, electricity, and telecommunications remain available to them at all times.

2.4.5.6. Defense Industrial

The defense industrial portion of Arizona's infrastructure refers to that portion of the state's economy that is devoted to support the nation's defense systems. Some of the largest defense industrial contractors have Arizona facilities, including Raytheon, Honeywell, and General Dynamics. These companies are critical to the defense of the United States and their requirements for water, electricity, and telecommunications are clearly defined.

2.4.5.7. Retirement Communities

Today, one of the fastest growing industries in Arizona is the retirement living industry and the companies providing support to it. Their requirements include medical facilities, banking, water, electricity, and telecommunications. Because of Arizona's climate, many communities are growing at record-breaking pace, with more people moving to the state to enjoy their senior years.

2.4.5.8. Banking and Finance

The banking and finance sector supports all of the other critical infrastructure components discussed above, and includes banking and financial structures, wholesale banking operations, financial markets, regulatory institutions, repositories for documents and financial resources. Several banks also maintain their call center operations in Arizona. As with other infrastructure components, they depend on water, electricity, and telecommunications for their ability to do business in Arizona.

2.4.5.9. Airports

Arizona has 79 airports, illustrated in Figure 5. These airports provide vital links to the state for both tourism and day-to-day operations. The state's airports, especially Phoenix International (Sky Harbor), and Tucson International Airport provide convenient access for travelers from

around the world. Many regional and private airports provide additional links used for transportation and industry, as well as tourism.

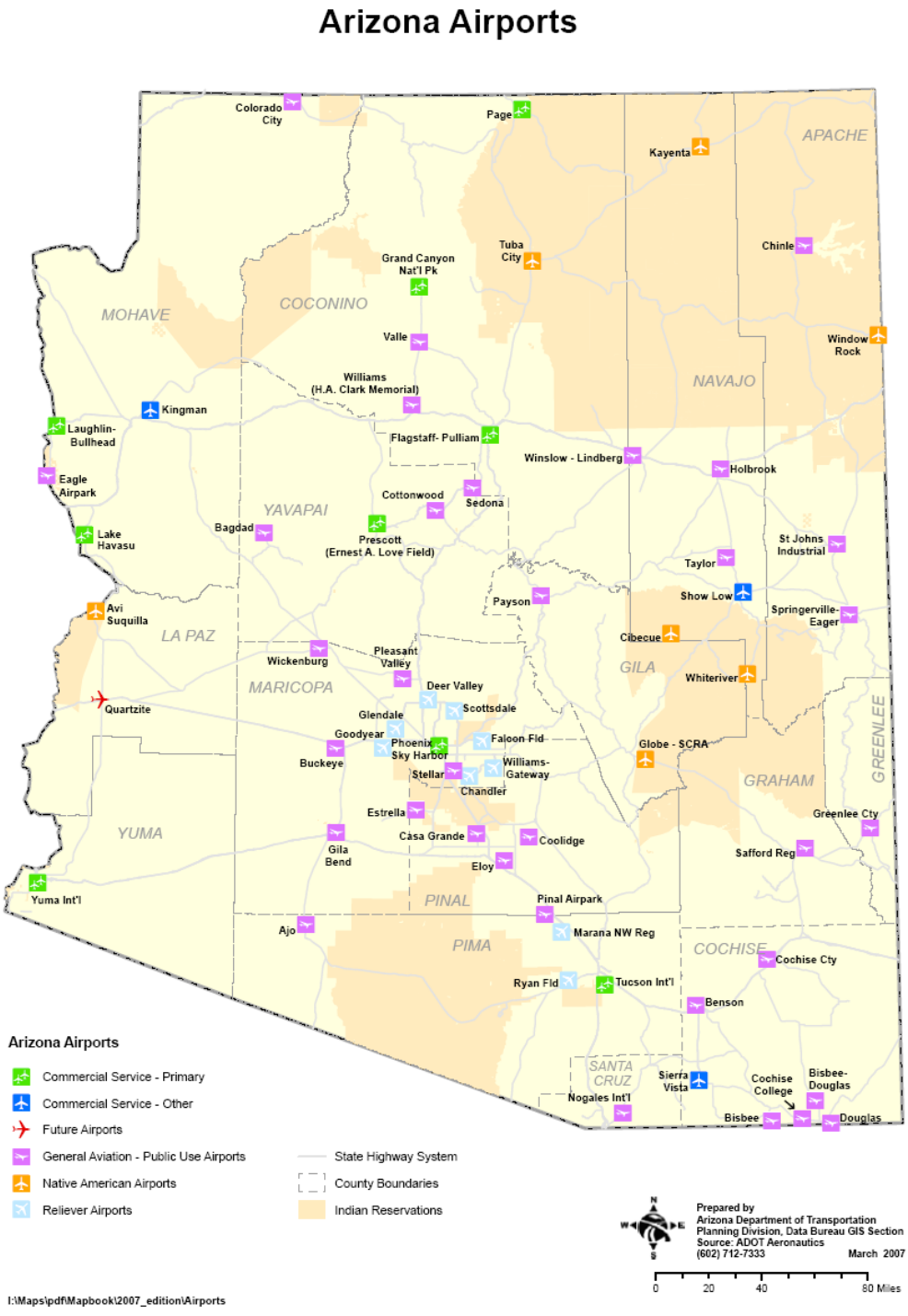

Figure 5 - ARIZONA AIRPORTS

2.4.5.10. Interstate Highway System

Five interstate highways (8, 10, 17, 19, and 40) transect the state and play major roles in its commerce and transportation environment. Interstates 10 and 40 traverse the state from its eastern border to its western border. Interstate 10 is the east-west corridor along Arizona's south, while Interstate 40 serves as the east-west corridor in the north-central region of the state. Interstates 17 and 19 are north south and are entirely within the state. Interstate 8 starts within the state and travels west until it reaches the Pacific Ocean at San Diego. A disruption to any of these roadways could be devastating for commerce on both coasts as they are part of the highway system connecting the entire U.S. A sixth interstate, Interstate 15, travels along the northwest corner of the state in Mohave County.

Figure 6 provides an illustration of Arizona's interstates, major highways, and state road systems.

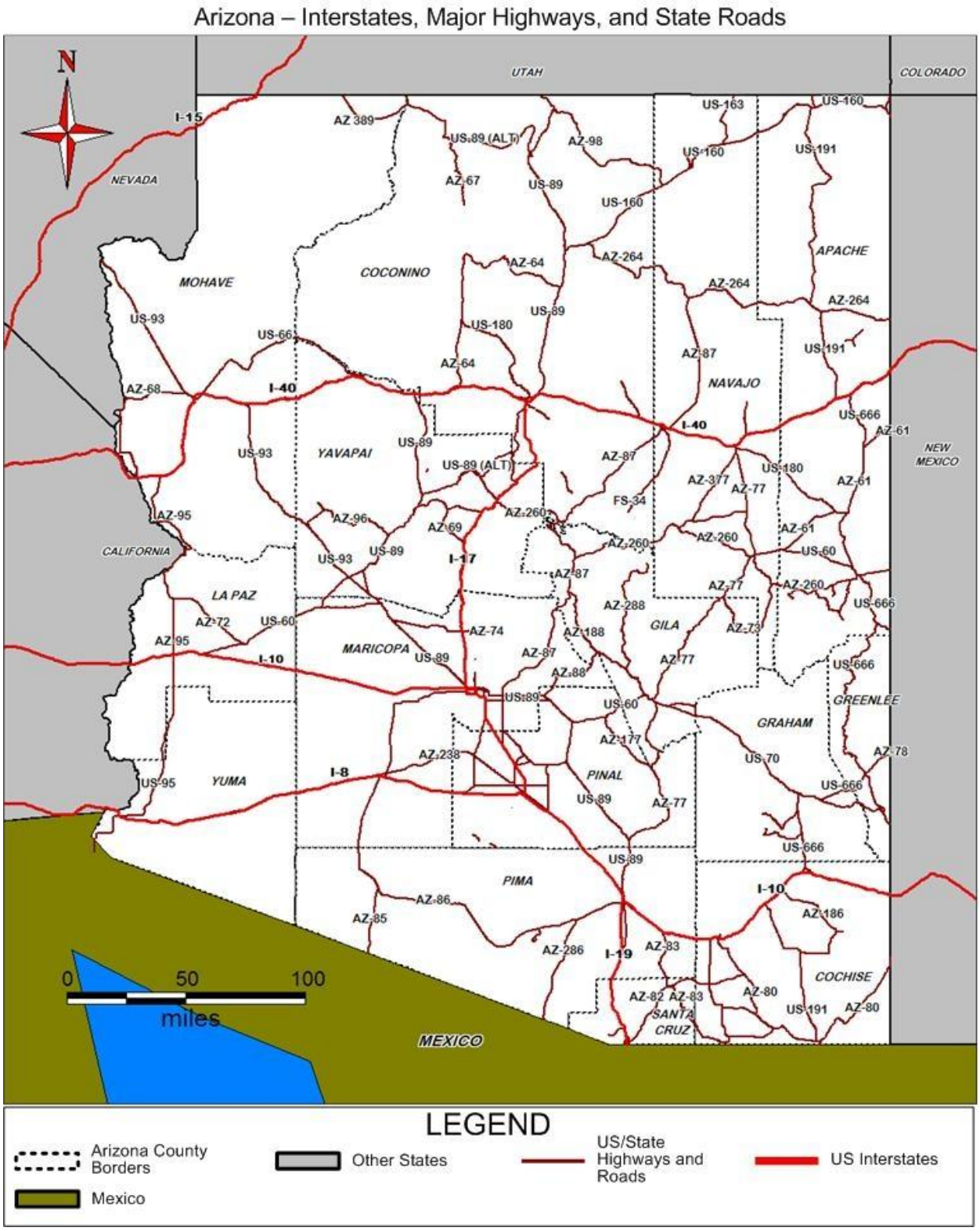

Figure 6 - ILLUSTRATION OF COUNTY SIZE AND MAJOR ROADWAYS

CANAMEX Trade Corridor

The United States Congress defined the CANAMEX Trade Corridor in the National Highway Systems Designation Act of 1996. The corridor is a high priority for the United States, Mexico, and Canada. As a major cornerstone to the North American Free Trade Agreement (NAFTA), the CANAMEX Corridor provides many opportunities to build regional economic prosperity through innovating:

- Safe and efficient multi-modal transportation networks
- Enhanced global competitiveness, which requires quality education, an accessible telecommunications infrastructure and an appropriate regulatory environment
- Shared commitment to the region's Quality of Life[6]

The corridor extends from Nogales, Arizona, through Nevada, Utah, Idaho, and Montana to the Canadian border. Generally, in Arizona, the corridor follows Interstate 19 from Nogales to Tucson, then goes north on Interstate 10 through Phoenix. From there, the corridor follows US-93 to the Nevada border.

2.4.5.11. Secondary Highways

According to the Arizona Department of Transportation (ADOT), there are several secondary roadways critical to the state's vitality. This is especially true should emergency evacuations be required. These secondary roadways are listed in Table 6.

Arizona Secondary Roadways			
US-60	SR-79	US-89	SR-101
US-66	SR-86	SR-90	SR-102
SR-71	SR-87	US-93	US-180
SR-77	US-89-A	US-95	US-191

Table 6 - SECONDARY ROADWAYS

Should an evacuation take place, most of the roadways listed above would become one-way roads used as city evacuation routes. Additionally, public safety officials would reserve certain roads for their use. ADOT has established plans to handle mass evacuations should they be required. For additional information about mass evacuation routes, contact ADOT. For information about any of the routes listed in Table 6, go to: http://members.tripod.com/~rachela/roads/az_roads.html

[6] http://www.canamex.org/

2.4.5.12. Bridges

A bridge crossing a waterway is considered "critical," since there are very few alternate routes available, especially when crossing state borders. Bridges crossing the normally dry Salt and Gila Rivers in and near the Phoenix metro area, and the Santa Cruz, Rillito, and Pantano Wash in and near the Tucson area are critical to allow commuters to travel to and from work. Similarly, several major railroad lines use critical bridges to cross these waterways. Some of the bridges considered critical include:

- Glen Canyon Dam Bridge
- Navajo Bridge
- Hoover Dam (2)
- Topoc
- Parker
- Yuma
- Blythe
- Needles
- Bullhead City
- Fort Mohave Bridge

2.4.5.13. Waterways

The major rivers in Arizona are the Colorado, Little Colorado, Gila, Salt, Verde, Santa Cruz, and Bill Williams. In addition to these waterways, there are several popular lake destinations, including Lake Mead, Lake Havasu, Lake Mohave, Theodore Roosevelt Lake, San Carlos Lake, Saguaro Lake, Lake Pleasant, Apache Lake, Canyon Lake, and Lake Powell.

As mentioned earlier, to enable use of surface water when and where it is needed, highly elaborate storage reservoirs (including many of Arizona's lakes) and delivery systems were constructed throughout the state. The reservoirs on the Salt, Verde, Gila, and Agua Fria rivers are among the most noteworthy. In addition, the 336-mile Central Arizona Project (CAP) canal transports Colorado River water from near Parker into and out of Lake Pleasant, and then to treatment plants in Phoenix and Tucson. A map with Arizona's lakes, rivers, and waterways is included as Figure 7. Although the map indicates what appear to be many waterways, none provides a transportation corridor into the state. The control of waterways provides water and electricity for Arizona's residents.

2.4.5.14. Ports of Entry

The most economically important port in Arizona is Nogales. Nogales is one of the four primary ports of entry between the United States and Mexico. Almost $19 billion in trade comes through this port annually, with 89 percent of all surface mode trade (truck, rail, etc.) between Arizona and Mexico passing through this city.

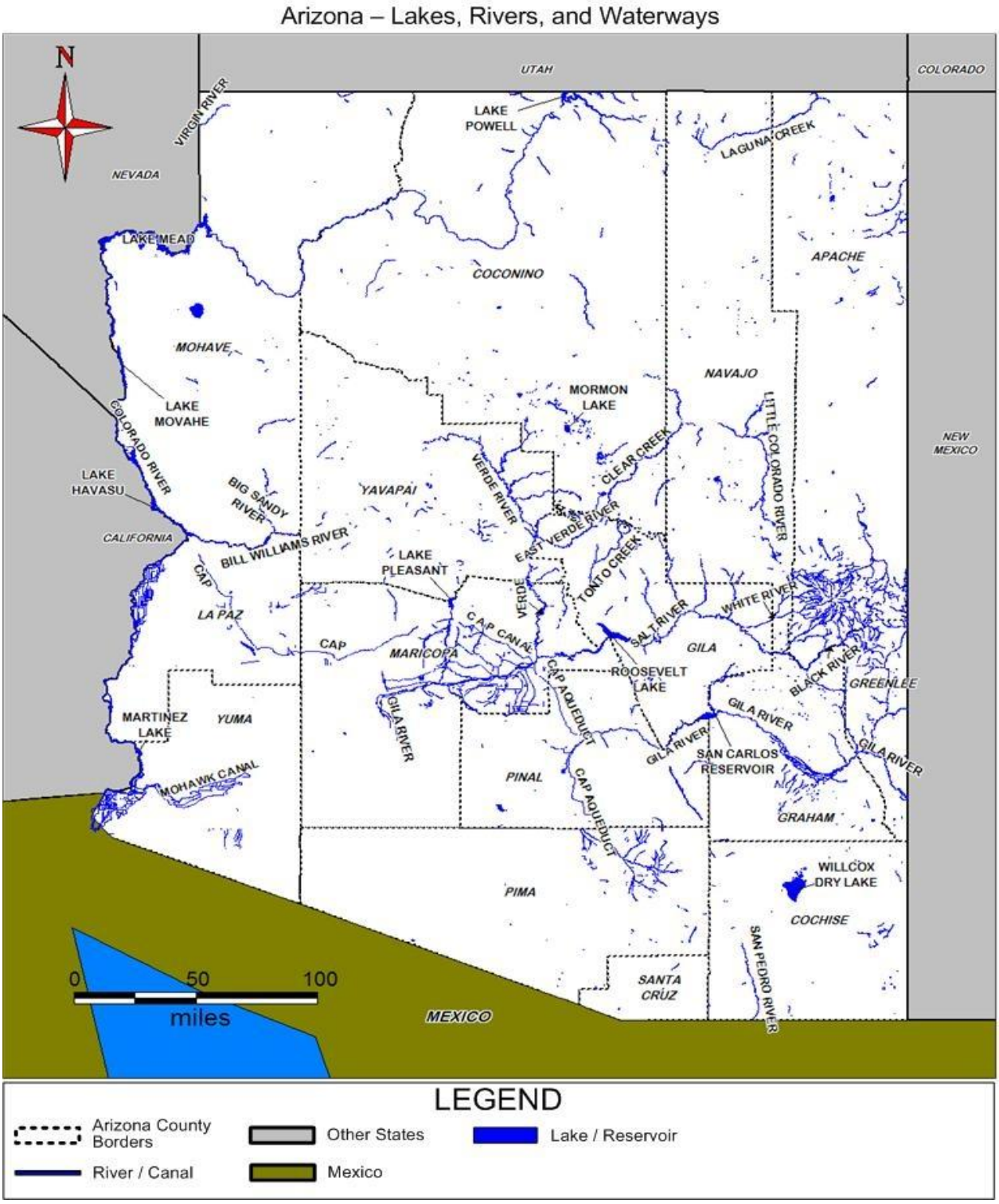

Figure 7 - ARIZONA'S LAKES, RIVERS, AND WATERWAYS

2.4.6. Major Geographical Considerations

Arizona shares a 389-mile border with Mexico, most of which is unregulated and unprotected, as its sheer size makes it impossible to patrol adequately with existing Border Patrol resources. Communications interoperability and public safety information exchange is vital to ensure a secure border and minimize violence to Arizona's citizens and the officers protecting them. To this end, cross-border communications between the United States and Mexico are important. Today, this coordination takes place unofficially, with the exchanging of radios between cities on both sides of the international border. This unofficial, albeit important cross-border communication link is a vital requirement to coordinate activities in this area of his state.

Arizona also has two major desert environments: the lower desert and the high desert. Each has its own special set of requirements for equipment, protection, weather conditions, and environmental concerns.

In north central Arizona are the San Francisco Mountains, situated near the Flagstaff area. These mountains and their associated topography (Humphreys Peak, north of Flagstaff, are 12,633 feet above sea level) present additional challenges to Arizona. Across the northwest portion of the state is the Grand Canyon, with elevation dropping over 5,000 feet to the Colorado River. The overall geography, coupled with the severe climate, makes Arizona's overall environment very challenging and unforgiving.

2.4.7. Annual and Upcoming Events

2.4.7.1. Annual Events

Arizona is the home of six professional sports teams including the National Basketball Association's (NBA's) Phoenix Suns, Major League Baseball's (MLB's) Arizona Diamondbacks, the National Football League's (NFL's) Arizona Cardinals, the National Hockey League's (NHL's) Phoenix Coyotes, the Women's National Basketball Association's (WNBA's) Phoenix Mercury, and the Arena Football League's (AFL's) Arizona Rattlers. Tens of thousands of visitors attend the major league baseball spring training camps located at nine municipal stadiums in the Phoenix/Tucson regions each year. The major sporting venues for these teams include the University of Phoenix Stadium, America West Arena, Chase Field, Arizona State University (ASU) Sun Devil Stadium, Northern Arizona University (NAU), and Glendale Arena. All of these venues, which rank among the largest and most modern in the country, reach sold-out capacity on a regular basis, as they are booked throughout the year.

Tempe hosts one of the largest New Years' Eve celebrations in the country, attended by approximately 100,000 people.

Phoenix is the home of several world-class parades as well as marathons and walks. Some of these events are:

- Runners Den Road Classic—February
- Laveen Country Challenge bike race—February

- Lost Dutchman Marathon—February
- Crown King 50k—March
- MS-150 two-day bike ride—March
- Highline Trail 50-mile race—April
- Colorado River Run - April
- Ironman Triathlon—April
- Arizona Diabetes Association Walk for a Cure (East, West, and Central)—September
- Native American Recognition Days - October
- Cactus Cha-cha foot race—October
- Susan G. Komen Race for the Cure—October
- Multiple Sclerosis (MS) Walk on the Wild Side—October
- Young Men's Christian Association (YMCA) Half Marathon—October
- Javalina Jundred 100 mile race—October
- Juvenile Diabetes Research Foundation (JDRF) Walk to Cure Diabetes—November
- Fiesta Bowl Half Marathon—December
- Fiesta Bowl Parade—December
- SRP Cycle for Life—December

In addition, the Phoenix area also plays host to one of the best-attended golf tournaments in the world each year. The event, now called the Fred Billings Ramsey Group, Inc. (FBR) Open, regularly draws over 500,000 spectators during tournament week, making it one of the largest recurring spectator events in the nation. Phoenix International Raceway hosts National Association for Stock Car Auto Racing (NASCAR) Nextel Cup events twice a year, bringing many tens of thousands of fans to the area.

Because the southern half of Arizona is known for its warm and dry winter weather, communities in this part of the state, especially those in the Tucson area, play host to a multitude of large-scale, high-profile events from November through February. Like the major sporting activities, these events will also draw thousands of visitors.

- Tucson Film and Music Festival
- Arizona Film Festival
- Sedona Jazz on the Rocks
- PGA Match Play Golf Championship
- El Tour De Tucson Bike Race (with as many as 10,000 riders)
- Tucson Gem and Mineral Show
- Tucson Rodeo and Parade

Further evidence of Arizona's incredible drawing power during the winter months is that many communities in the southern half of the state will cite two population figures: one for the summer and another for winter, when many thousands of "snowbirds" – retirees still living part time in colder climates – make their annual migration to Arizona.

2.4.7.2. Upcoming Events

In addition to the many annual events that Arizona hosts, there are many onetime events that take place in the state. Most notable is the 2008 Super Bowl (XLII) hosted in Glendale at the University of Phoenix stadium.

2.4.8. Typical Disasters

Table 7 outlines the disasters declared by the Federal Emergency Management Agency (FEMA) in the state since June 19, 2002. Additionally, Arizona Emergency Operation Centers (EOCs) contributed to this information (Table 8). The county EOC information includes EOC activations, multi-jurisdictional, and multi-disciplinary actions that occurred within their jurisdiction. It also includes events that occur on a regular basis to which multiple agencies will often respond. In some cases, the EOC would not be activated, as the event reaches its end in a matter of moments (as in the case of a multi-jurisdictional police chase).

Based upon the information included in these tables, the "typical" disaster Arizona experiences are by wildland and other types of fires. Although mostly desert terrain, Arizona experiences flooding caused by monsoons and microburst that occur in the state.

FEMA Declared Emergencies					
Number	**Declared**	**Description**	**Number**	**Declared**	**Description**
1660	09/07/2006	Severe Storms/Flooding	1581	02/17/2005	Severe Storms/Flooding
2645	06/18/2006	Brins Fire	2523	06/28/2004	Willow Fire
2643	06/15/2006	Woody Fire	2520	06/09/2004	Three Forks Fire
2642	06/13/2006	Potato Fire	2478	07/14/2003	Kinishba Fire
2640	06/01/2006	LaBarraca Fire	1477	07/14/2003	Wildfire
3241	09/12/2005	Hurricane Katrina Evacuation	2471	06/21/2003	Ash Fire
2570	07/22/2005	Edge Fire Complex	2470	06/18/2003	Aspen Fire
2562	06/23/2005	Humbug Fire	2440	07/14/2002	Wild Cow Fire
2561	06/22/2005	Cave Creek Fire Complex	2439	07/14/2002	Oracle Hill Fire
2560	06/12/2005	Hulet Fire	1422	06/25/2002	Wildfires
2559	06/08/2005	Bobby Fire	2430	06/21/2002	Chedeski Farms Fire
2558	05/26/2005	Vekol Fire	2429	06/19/2002	Rodeo Fire
1586	04/14/2005	Severe Storms/Flooding			

Table 7 - DECLARED DISASTERS[7]

[7] http://www.fema.gov/femaNews/disasterSearch.do

Multi Jurisdictional/Disciplinary Events	
County	**Event**
Cochise	Hazardous material
	Landfill in Mexico burning toxic fumes into United States
	Flashfloods during monsoon season
	Search and rescue missions
	Multiple vehicle traffic accident
	Bomb threat
	Armed robbery
	Manning boarder during drug wars/runs on the border
La Paz	HazMat incident at Interstate 10 at Mile Post 10, included Arizona Department of Public Safety, Arizona Department of Transportation, La Paz Sheriff's Department, California Highway Patrol, California Transit, Emergency fire and rescue departments
Maricopa	(8/2007) – Flooding caused roadway and infrastructure damage in Cave Creek
	(6-7/2005) – Cave Creek Fire
Mohave	(2007) - Flooding
	(2007) - HazMat incident
	(2006) - Wild land fires
	(2005) - Flooding
Pima	(4/25/1995) – Large fires involving multiple fire agencies responding per MOA. Law enforcement assistance for point control and investigation purposes
	(1993) – Flooding as a result of natural or manmade events – most common occurrence
	(1987) – Rioting and demonstrations – the City of Tucson experienced rioting after the University of Arizona won the national basketball championship. Pima County Sheriff's Department assisted
	Mass causality event – aircraft down
	Cross-jurisdictional vehicle pursuit
	Hazardous material events
	Search and rescue – missing children, persons
Pinal	(4 times within the last 2 years) – Main telephone lines cut (fiber). All lines and cellular devices were no longer functional. County 911 services were not able to receive calls (5 PSAPS, 5,500 square miles). County required mobile command vehicle from state EOC.
	Major power outages caused by storms, such as monsoons, microburst, etc. – Required evacuations, shelters, etc. This generally will also disrupt primary telephone circuits and cellular transmission towers. Requires the use of secondary communications (2-way radio) and satellite phones within and outside of the local region.
	(Regularly – annual) – Flooding will cause a response including evacuation, shelter, etc.
	(Regularly – annual) – Wildfires will cause a response including evacuation, shelter, etc.
	(Several times a year) – Hazardous material releases will cause a response including evacuation, shelter, etc.
	Bomb threats at major facilities – requires government and civilian evacuations
	Prison escapes and riots – requires a multi-agency, multi-discipline response. This includes responses necessary for manhunts, security checkpoints, and traffic stops/searches.
	Vehicle chases – multi-jurisdictions

Multi Jurisdictional/Disciplinary Events (Continued)	
County	**Event**
Pinal (Continued)	Vehicle accidents on state highways and rail – Interstates 10, and 8, U.S.-60, the Union Pacific, and Copper Basin Railroad. Any accident would require response from multiple agencies and disciplines. In each case, both ingress and egress are limited, would likely be across county or state boundaries and affecting thousands (of communicators
Santa Cruz	(8/2007) Nogales Wash Flooding – City of Nogales, Santa Cruz County, and Arizona declare State of Emergency. City of Nogales, Santa Cruz County, DDEM, Department of Corrections, Army Corps of Engineers, and International Boundary Water Commission participated in this event
	(8/2007) Elm Street Fire – 8 apartments burned, 30 people evacuated. Red Cross called to assist Santa Cruz EOC.
	(7/2007) Valle Verde Water Wells contaminated – City and county declare emergencies. Activation of City of Nogales emergency operations, county health, Santa Cruz EOC
	(2006) Flooding in Nogales, Sonora (Mexico) resulted in Nogales Arizona personnel and equipment from several fire departments in Santa Cruz County to assist Mexico
	(2006) Sulfuric acid spill in Mexico along the Santa Cruz River – Nogales, Arizona Fire, Nogales Police Department, Environmental Protection Agency, communications with Nogales, Mexico required
	(2006) VH Shopping Plaza Structure Fire, Nogales Sonora (Mexico). Nogales Arizona Fire Department called to assist
	(8/2006) HazMat incident with Border Patrol – Rio Rico Fire, Nogales Fire Department, Border Patrol, Santa Cruz Sheriff's Department, and EOC participated
	(8/2006) Mi Casa Evacuation due to flooding – More than 100 mobile homes and 300 individuals evacuated. EOC activated and Red Cross assisted.
Yavapai	(6-7/2006) – Tiger Complex Fire – on the southeast side of the county threatened the community of Crown King
	(6/18/2006) – Brins Fire in Sedona caused the evacuation of Oak Creek Canyon and parts of the north side of Sedona. Action included animal disaster services, shelter, etc. This fire involved two Nation Incident Management Teams.
	(6/1/2006) – La Barranca Fire in the Village of Oak Creek caused the evacuation of the east side of the communication and included shelter for those evacuated
	(6/7/2006) – Battle Fire in Mayer threatened that town and surrounding ranches. Caused evacuations, and shelter.
	(8/31/2005) – The Woodlands Apartment Fire in Prescott included the need for evacuation and shelter
	(12/2005) – The Cornville propane event was caused by an overturned truck, resulting in the evacuation of 200 homes and shelter operations
	(8/31/2005) – Bennett Oil Fire in Prescott was at a gas station – this caused the evacuation of several neighborhoods and the Yavapai Community College. Shelter operations were set up for this event
	(7/2005) – Cave Creek Fire was a major incident that involved the east side of the county. This fire also involved three National Incident Management Teams, included evacuations, and shelter services to become operational

Multi Jurisdictional/Disciplinary Events (Continued)	
County	**Event**
Yavapai (Continued)	(7/2005) – Lousy Canyon Fire near the City of Black Canyon, this included evacuation and shelter services
	(2/2005) – Presidential Flood Declaration for Yavapai County
	(1/2005) - Presidential Flood Declaration for Yavapai County
	(5/15-17/2002) – The Indian Fire was a major incident including a National Incident Management Team. This fire was responsible for causing the evacuation of 3,000+ people and included a major shelter program

Table 8 - LOCAL GOVERNMENT MULTI-JURISDICTIONAL, MULTI-DISCIPLINARY EVENTS

2.5. NIMS/Multi-Agency Coordination System

Recognizing the critical nature of coordinating emergency response and communications, President George Bush issued Homeland Security Presidential Directive-5 (HSPD-5) on February 28, 2003. This directive ordered the Secretary of Homeland Security to develop and oversee a new and more advanced Incident Command System (ICS) known as the National Incident Management System (NIMS). NIMS' goal is to provide a consistent nationwide template for all organizations that may work together in a cooperative response to a major incident. By training in a national standardized program, all government, private sector, and non-governmental organizations will be better equipped to coordinate and communicate their actions during planning, response, and recovery of domestic incidents.

NIMS requirements include:

- The use of plain language and common terminology rather than using codes (commonly called 10-codes) when responding to an incident requiring interoperability among two or more responding users
- Use of a command post or Emergency Operations Center
- The use of the incident command structure (ICS) as a basic organizational structure- this includes components for command, operations, finance, logistics, etc.
- Manageable span of control that limits the number of workers for which a supervisor is responsible
- Management by objectives identifies what must be completed and when in order to help control the situation
- Creation of an Action Plan
- Integrated communications, including those required for command and control
- Unified command that is dynamic based upon requirements of a situation
- Accountability

The state understands the majority of incidents are managed locally and adopted the NIMS on March 29, 2005 (see Appendix C). The initial response to most incidents is handled by local 911 dispatch centers, emergency responders within a single jurisdiction, and direct supporters of those emergency responders. When incidents escalate, a scalable command and communications system is required for responder safety and efficient resource use.

In the event of an incident where state assistance is required, the state EOC is activated and acts as the Multi-Agency Coordination Center (MCC) for the state. The EOC staffing model uses the NIMS ICS command structure. The Resource Unit Leader in the planning section is responsible for the inventory and allocation of resources to the incident while maintaining readiness in the remainder of the state. Personnel with knowledge of each discipline's deployment status assist the Resource Unit Leader. For example, the state EOC may not activate during isolated wildfires, but if an incident escalates and requires additional state resources the state EOC activates. The Resource Unit from the State Land Department briefs the state EOC Resource Unit Leader on the status of fire resources assigned to the incident.

The state is divided into five regions, with a designated primary dispatch center as the contact point for coordinating each regional response. When the resources deploy to the impacted area, the response to the area of operation is coordinated. The primary contact center monitors the state's current interoperable communications network, AIRS. When the responding resources enter into the affected state Homeland Defense region, the primary dispatch center for that region coordinates the staging of resources until they are assigned to the incident.

The primary contact center and incident Communications Unit Leader (COML) coordinates available frequency spectrum usage to provide communications for the Incident Commander to ensure safe and effective communications.

The state currently utilizes several plans (e.g., Statewide Emergency Response and Recovery Plan, agency business continuity plans and continuity of government plans, etc.) to provide additional resources to county and local governments. The Arizona State Land Department coordinates wild-lands firefighting involving state land. The state utilizes pre-established MOUs with local fire departments and fire districts to obtain additional resources (additional information may be found in the *Fire Chief's Mutual Aid Plan* http://azchiefs.publicaware.com/Assets/dept_1/PM/pdf/Mutual_Aid_Plan.pdf). The state requests and coordinates the assignment of the additional fire resources to the incident. These requests utilize standard fire resources. Once assigned to the incident, these resources integrate into the ICS command structure following the NIMS example.

2.5.1. Mutual Aid and NIMS

As an example of how the mutual aid system works within the overall state NIMS program, requests for the Phoenix UASI region resources are made through the Phoenix Fire Regional Dispatch Center. Available assets include law enforcement, bomb squad, Special Weapons and Tactics (SWAT), Hazardous Materials (HazMat), Weapons of Mass Destruction (WMD) and Chemical, Biological, Radiological and Nuclear (CBRN) units. Once assets are requested, the City

of Phoenix EOC opens and notifies the County, state EOCs, Arizona Department of Public Safety (DPS) Duty Officer, and City EOCs in the UASI system. Being NIMS-compliant, the use of common terminology to communicate requests and instructions is required when more than two agencies assist at an incident. Accountability starts at the individual unit level with the local incident commander, and channels up through the command structure as the incident escalates. Department commanding officers are responsible for their agency's resources, county-level officials are responsible for the departments' resources, and state officials are responsible for state's resources and coordinating the accountability of the committed county/local departments. To assist in the use of NIMS and ICS, exercises are conducted regularly (see Section 4.4). Participation by all levels of government within the state is encouraged.

2.6. REGIONS/JURISDICTIONS

Arizona's counties and cities are assigned into DHS Regional Advisory Councils and Urban Area Security Initiatives areas as described in the following sections.

2.6.1. COUNTIES

Arizona is comprised of 15 counties. Table 9 lists the cities and towns within each county. Politically, each county has an elected Board of Supervisors.

Arizona Cities and Counties				
Apache County	**Gila County**	**Maricopa County**	**Navajo County**	**Santa Cruz County**
Alpine	Globe	Avondale	Heber-Overgaard	Nogales
Eagar	Hayden	Buckeye	Holbrook	Patagonia
Greer	Miami	Carefree	Joseph City	Rio Rico
Saint Johns	Payson	Cave Creek	Lakeside	Sonoita
Springerville	Pine	Chandler	Overgaard	Tubac
	Strawberry	El Mirage	Pinetop-Lakeside	
Cochise County	Star Valley	Fountain Hills	Show Low	**Yavapai County**
Benson	Winkelman	Gila Bend	Snowflake	Ashfork
Bisbee	Young	Gilbert	Taylor	Bagdad
Bowie		Glendale	Winslow	Black Canyon City
Douglas	**Graham County**	Goodyear		Camp Verde
Huachuca City	Pima	Guadalupe	**Pima County**	Chino Valley
Pearce	Safford	Litchfield Park	Ajo	Clarkdale
Sunsites	Thatcher	Mesa	Arivaca	Cottonwood
Sierra Vista		Paradise Valley	Catalina	Dewey-Humboldt
Tombstone	**Greenlee County**	Peoria	Green Valley	Jerome
Willcox	Clifton	Phoenix	Marana	Lake Montezuma
	Duncan	Queen Creek	Oro Valley	Mayer
Coconino County	Morenci	Scottsdale	Sahuarita	McGuireville
Flagstaff		Sun City	South Tucson	Peeples Valley
Fredonia		Sun City West	Tucson	Prescott
Page		Sun Lakes		Prescott Valley
Sedona (also		Surprise	**Pinal County**	Rimrock
Yavapai Co)		Tempe	Apache Junction	Sedona (also
Tuba City		Tolleson	Arizona City	Coconino Co)
Williams		Tonopah	Casa Grande	Seligman
		Wickenburg	Coolidge	Verde Village
La Paz County		Youngtown	Eloy	Yarnell
Bouse			Florence	
Ehrenberg		**Mohave County**	Kearny	**Yuma County**
Parker		Bullhead City	Mammoth	San Luis
Quartzsite		Chloride	Maricopa	Somerton
Salome		Colorado City	Oracle	Wellton
Wenden		Dolan Springs	Picacho	Yuma
		Kingman	Picacho Peak	
		Lake Havasu City	Red Rock	
		Oatman	San Manuel	
			Superior	

Table 9 - COUNTIES AND CITIES OF ARIZONA[8]

2.6.2. Regional Advisory Councils

Arizona has created a series of Regional Advisory Councils (RACs) (see Figure 8) pursuant to §41-4258 of the Arizona Code (see www.homelandsecurity.az.gov). The regions represent the state's geographical divisions for planning and coordination purposes. The RACs are tasked with developing, implementing, and maintaining regional homeland security initiatives. Each RAC also contributes to implementing the state's comprehensive risk assessment. Additionally, RACs assist the integrated regional approach to homeland security issues in the state, and

[8] http://az.gov/webapp/portal/displaycontent.jsp?name=county

establish a baseline prevention and response capability (through their anchor cities) that is consistent with the state and regional plans. RACs collaborate with other councils and organizations to ensure the successful integration of homeland security programs and initiatives. RACs, however, do not have the authority to enter into MOUs. RACs develop a list of requests for homeland security grant program monies and forward these requests to the Director of the Arizona Department of Homeland Security. RACs are also called upon to make recommendations to the state on the allocation of state homeland security grant monies to eligible entities. Each RAC includes:

- A fire service representative from an urban or suburban area within the region
- A fire service representative from a rural area in the region
- A police chief
- A county sheriff
- A tribal representative
- An emergency manager
- A mayor
- A county supervisor
- Two at-large positions
- A representative from the Department of Public Safety
- A public health representative

Table 10 indicates the Homeland Security Region or RAC and their counties.

RACS By County				
Central	**East**	**North**	**South**	**West**
Maricopa	Gila	Coconino	Pima	Mohave
	Graham	Apache	Cochise	La Paz
	Greenlee	Navajo	Santa Cruz	Yavapai
	Pinal		Yuma	

Table 10 - RACS BY COUNTY

Figure 8 - HOMELAND SECURITY REGIONS[9] (OR REGIONAL ADVISORY COUNCILS) [RACS])

[9] http://www.azdohs.gov/documents/Regionpercent20Docs/AZRegionMapUpdated051507.pdf

2.7. URBAN AREA SECURITY INITIATIVES (UASI) / TACTICAL INTEROPERABILITY COMMUNICATIONS (TIC) PLANS

Today, the Phoenix Urban Area and Tucson Urban Area are designated as UASI regions. The Areas, Regions, and other required information is included in Table 11.

UASI/TIC Plans				
UASI Area	**Regions / Jurisdictions**	**TICP Title/ Completion Date**	**POC Name**	**POC Email**
Phoenix	Maricopa County	*Phoenix Urban Area Tactical Interoperable Communications Plan* May 2006	Jesse Cooper	jesse.cooper@phoenix.gov
Tucson	Pima County	Does not have a TIC Plan	Brad Olson	Brad.olson@tucsonaz.gov

Table 11 - UASI/TIC PLANS

The Phoenix UASI

The Phoenix UASI encompasses all of Maricopa County, which is also the entire Central Region RAC. Table 12 lists the municipalities included in the Phoenix area UASI. Figure 9 illustrates the Phoenix UASI's area.

Cities/Towns Included In Phoenix UASI			
Apache Junction	Gila Bend	Paradise Valley	Tolleson
Avondale	Gilbert	Peoria	Wickenburg
Buckeye	Glendale	Phoenix	Youngtown
Carefree	Goodyear	Queen Creek	Fort McDowell Indian Community
Cave Creek	Guadalupe	Scottsdale	Gila River Indian Community
Chandler	Litchfield Park	Surprise	Salt River Pima-Maricopa Indian Community
El Mirage	Mesa	Tempe	State of Arizona
Fountain Hills			Unincorporated Maricopa County

Table 12 - PHOENIX UASI CITIES

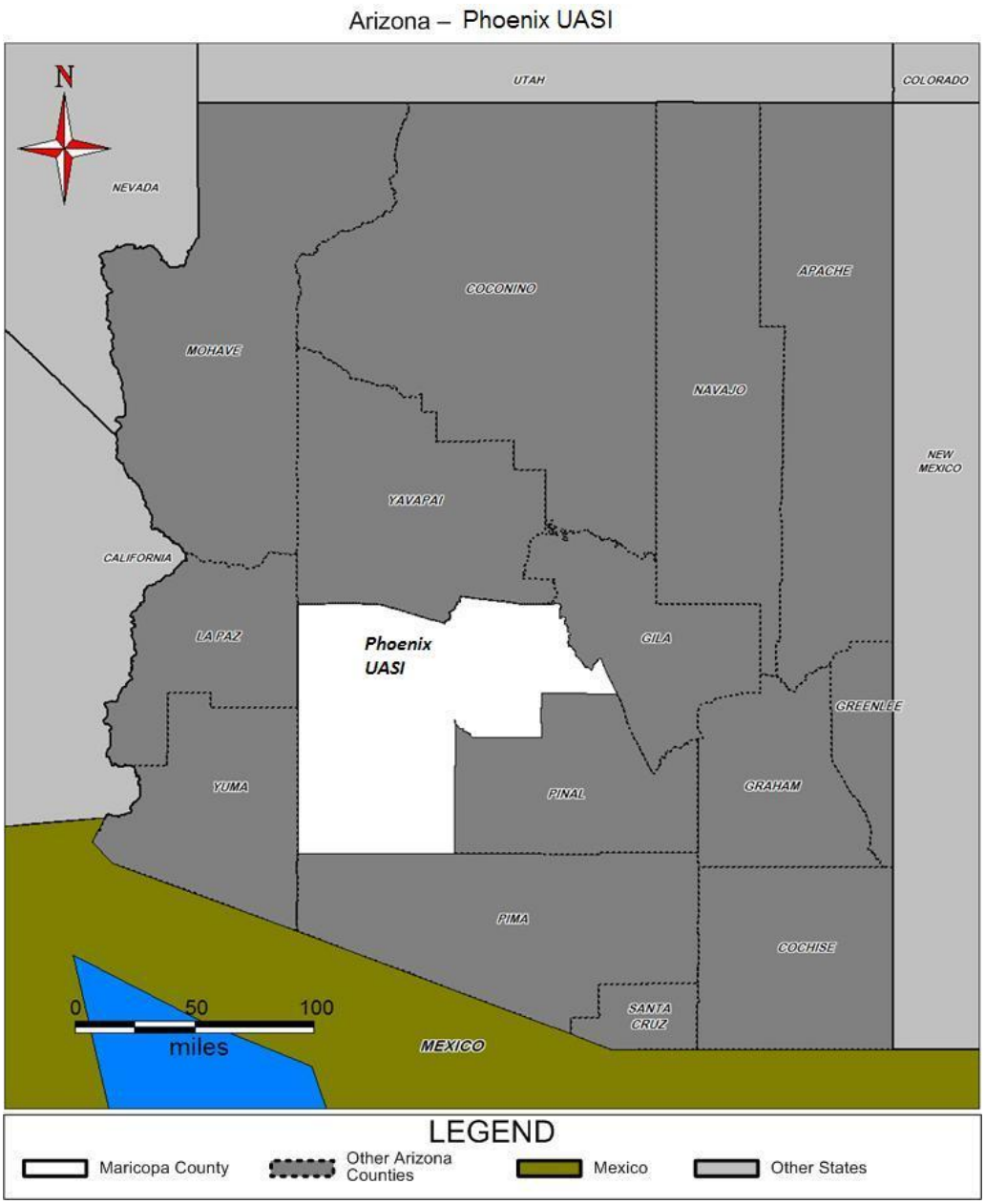

Figure 9 - PHOENIX UASI- INCLUDES ALL MARICOPA COUNTY

The Phoenix UASI Area Tactical Interoperability Communications (TIC) Plan, entitled *Phoenix Urban Area Tactical Interoperable Communications Plan*, was completed in May 2006. On August 5, 2006, a full-scale validation exercise was held at the University of Phoenix Stadium. The exercise was performed in conjunction with a scrimmage game and the stadium's grand opening. The results of the Phoenix UASI TIC Plan exercise were documented in an after-action report. Members from ICTAP and DHS were on site to evaluate and validate the Phoenix UASI TIC Plan.

Integration of the TIC Plan

The existing Phoenix UASI TIC Plan captures resources specific to response capabilities within its Urban Area and describes state resources that may be used in times of emergency. The Phoenix TIC Plan has been exercised effectively in several public safety incidents and events. Authorized persons may review the Phoenix TIC Plan by contacting the Phoenix UASI or DHS. This Arizona SCIP incorporates the requirements of the Phoenix TIC Plan and is complementary to it. To illustrate this fact, the state Demonstration Project will connect the state radio system to the Phoenix-Mesa system. This interconnection will demonstrate the state's ability to integrate with the Phoenix UASI TIC Plan and will enable immediate interoperability between the systems.

Tactical Communications Interoperability Plan Availability

The Phoenix UASI TIC Plan is available in its entirety from the UASI point of contact (POC). While the TIC Plan focuses on specific tactical resources available, the SCIP is designed as a strategy document. TIC Plans will support the SCIP and will be developed and revised to ensure that all TIC Plans are in alignment with the SCIP as a resource to provide specific communications to authorized personnel via the POC or the www.niix.org website.

After-Action Report:

The complete after-action report is available from the Phoenix UASI POC and is available to authorized personnel at https://www.llis.dhs.gov/.

Point of Contact:

The Phoenix UASI Area TIC Plan Primary and Alternate POCs are:

- Phoenix UASI Primary POC:
  - Name: Jesse W. Cooper
  - Title: Communications/IT Manager, Phoenix Police Department
  - Address: 100 E. Elwood Street, Phoenix, Arizona, 85040-1071
  - Office: 602-534-0315
  - Mobile: 602-768-4314
  - E-mail: *jesse.cooper@phoenix.gov*
- Phoenix UASI Alternate POC:
  - Name: Michael G. Worrell
  - Title: Captain, Phoenix Fire Department
  - Address: 150 S. 12th Street, Phoenix, Arizona, 85034
  - Mobile: 602-370-5232
  - E-mail: *mike.g.worrell@phoenix.gov*

The Tucson UASI

The Tucson UASI encompasses all of Pima County, Table 13 lists the municipalities included in the Tucson area UASI. Figure 10 illustrates the Tucson UASI's area.

TIC Plan Integration

Tucson was recently designated a UASI region and has not had time to prepare a TIC Plan. When the Tucson UASI creates their TIC Plan, they advise that they will work closely with the PSCC to ensure the plan aligns with those of the state and Phoenix. In addition to advising their intent to work in concert with the Arizona SCIP, the Tucson UASI also has members who sit as Commissioners of the PSCC thus assuring that Tucson's planning efforts will align with those outlined in this SCIP.

Point of Contact

Tucson UASI Primary POC:

- Name: Brad Olson
- Title: Deputy Chief, Tucson Fire Department
- Address: 265 S Church Ave, Tucson, AZ 85701
- Office: 520-791-4806 x 1210
- E-mail: *brad.olson@tucsonaz.gov*

Cities/Towns Included in Tucson UASI	
Ajo	Rillito
Arivaca	Sahuarita
Catalina	Santa Rita Foothills
Corona de Tucson	Sasabe
Cortaro	Sells
Green Valley	South Tucson
Lukeville	Topawa
Mount Lemmon	Tucson
Oro Valley	Vail
Pisinemo Trading Post	Why

Table 13 - TUCSON UASI CITIES

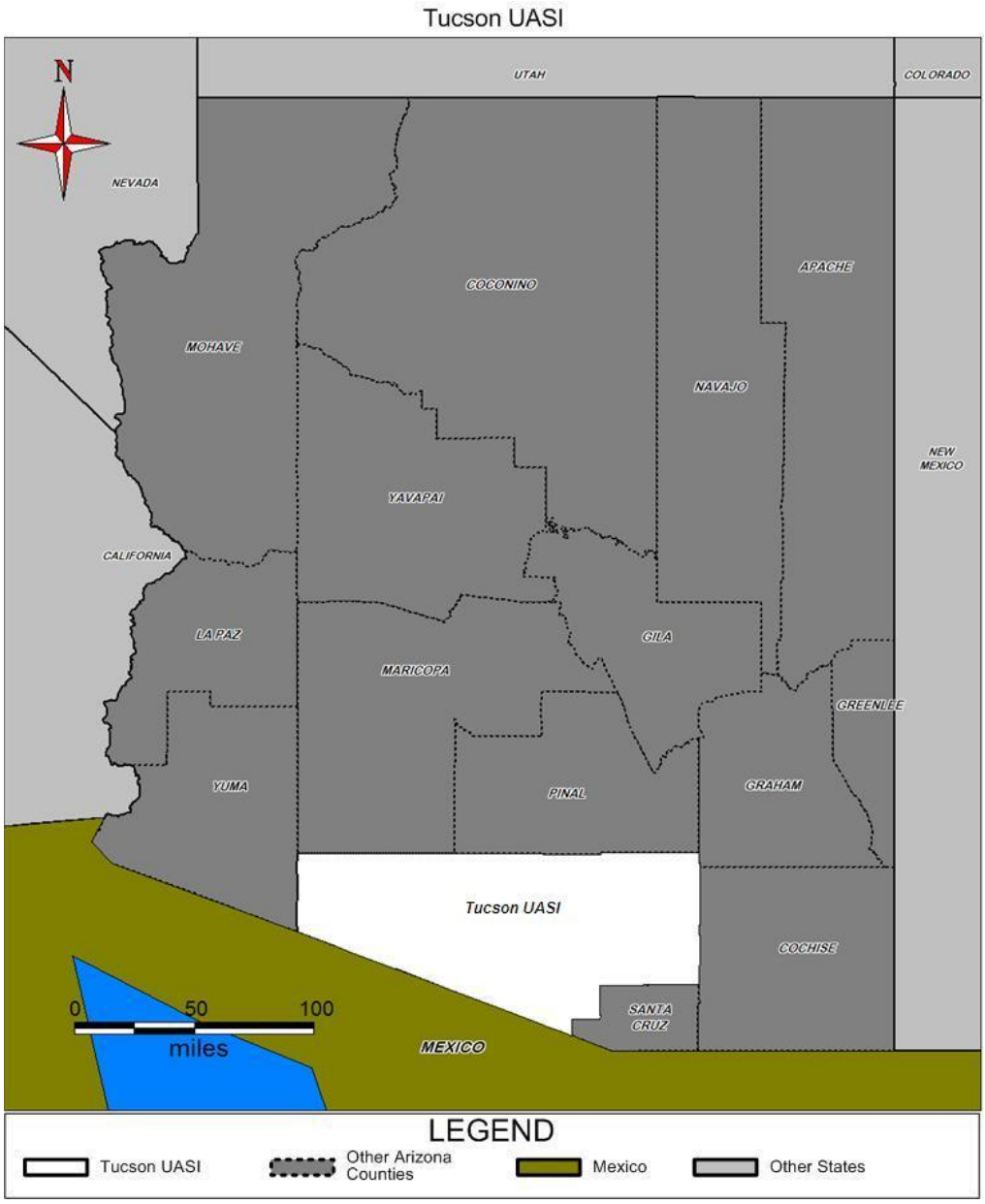

Figure 10 - TUCSON UASI - INCLUDES ALL PIMA COUNTY

2.8. Participating Agencies and Points of Contact (SCIP)

It has been the state's policy to include state, local, federal, tribal, NGO, and military representatives during this interoperability planning process, which has met with limited success, in that a relatively low number of federal, tribal, and non-governmental entities chose to participate in the PSCC and SIEC activities. However, this limited number of agencies represents the vast majority of the state's population. This is despite an outreach program that includes an extensive email distribution and meetings with RACs and others. The Co-Chair of the SIEC, for example, represents an NGO. The Department of Emergency and Military Affairs (DEMA) is composed of the Arizona National Guard and civilians who have played an important

role in the planning process. Other commissioners and committee members represent other disciplines. It is Arizona's policy to continue to invite and include all public safety disciplines in all phases of the SCIP process.

The PSCC Support Office is responsible for sending out over 400 email invitations to public safety officials representing over 80 percent of the state's population to attend PSCC and SIEC meetings. Additionally, this email is also forwarded to a tribal mailing list containing over 600 contact email addresses. Together, this represents a distribution of over 1,000 contacts. The distribution (based on domain name search and information provided by the tribal liaison for the PSCC) includes the agencies/tribal contacts in Table 14. For additional information about the PSCC distribution list, please contact the PSCC Support Office.

PSCC Distribution List			
42	Local government entities	10	Local government fire districts
15	State government entities	5	Local government law enforcement agencies
8	Tribal nations	2	Utilities
5	Federal government entities	16	Private companies
2	Educational entities	3	Non-governmental organizations (medical delivery service providers)
600	Names on tribal mailing list		

Table 14 - PSCC DISTRIBUTION LIST

Table 15 identifies the agencies that assisted Arizona in developing this SCIP by their contributing to this document, editing, and participation at meetings, etc. Names and contact information can be obtained from the PSCC Support Office. Additionally, the PSCC Support Office and the Arizona Department of Homeland Security extended an outreach to others by conducting a series of meetings that would discuss the SCIP and the Investment Justification process.

As part of the SCIP process, the project team surveyed each of the state's EOCs. Many of these surveys included follow up interviews that contributed vital information to this SCIP. The EOCs were helpful in sharing concerns and possible solutions for communications and data interoperability. The EOCs that responded to this survey and contributed important information to this process accounted for 92 percent of the population of this state of Arizona.

Additionally, the Arizona Department of Homeland Security sent an email broadcast to their stakeholders regarding the SCIP and the PSIC grant program. They posted each draft of the SCIP on their websites and referred their stakeholders to it for the purposes of soliciting comments and completing the PSIC grant funding process. The Department also referred to the PSCC website, told people about meetings where the SCIP would be discussed during meetings throughout the state, including RAC meetings, at UASI meetings and via telephone conference calls. This process solicited input from local government and non-governmental organizations that helped formulate the strategic initiatives, goals, and objectives that are part of this SCIP.

Participating Agencies	
Local Government City/County Not Public Safety	Local Government Law Enforcement
City of Casa Grande City of Mesa City of Peoria City of Yuma Pima County Pinal County Gila River Indian Community Town of Gilbert	Phoenix Police Department Coconino County Sheriff's Department Pima County Sheriff's Department Yavapai County Sheriff's Department Maricopa County Sheriff's Department La Paz County Sheriff's Department Tucson Police Department Gila County Sheriff's Department
Local Government/Fire Departments	Local Government Emergency Operations Centers[10]
Gilbert Fire Department Phoenix Fire Mesa Fire Department	Coconino County EOC Maricopa County EOC Mohave County Cochise County EOC Pima County Pinal County La Paz County EOC
State Agencies	Private Companies
Public Safety Communications Commission Department of Public Safety Government Information Technology Agency Department of Homeland Security Department of Emergency Management and Military Affairs Department of Health Services	Federal Engineering Motorola Northrop Grumman Tyco Electronics

Table 15 - PARTICIPATING AGENCIES

The PSCC and SIEC will continue to seek support and participation from every part of the community of interest, including additional local and tribal government representation and federal military and non-military personnel. It is the state's intent to make the process as inclusive as possible. To that end, Arizona is a participant in the Federal Partnership for Interoperable Communications (FPIC) teleconferences addressing and soliciting federal participation (civilian and military) in various parts of the PSCC process and goals.

Regional Planning and Focus Groups

As mentioned earlier, plans for interoperability started many years before SCIP development began, starting with the PSCC and the multiple studies that were conducted to determine the state of interoperable communications within Arizona. It included a needs analysis of the state and multiple regional interviews. The proposed statewide radio system described in this SCIP is

[10]The EOC's contributing to this SCIP represents 5,938,982 of the state's 6,432,007 population.

a product of that body of work, conducted over seven years including numerous interviews and questionnaires among consultants, state staff, and personnel from most public safety agencies within the state.

PSCC and SIEC meetings were held to discuss the SCIP and that process is outlined in Section 3 of this report. Each county EOC was also given the opportunity to contribute to this SCIP. The Arizona Department of Homeland Security and the PSCC Support Office also conducted a series of meetings statewide to enhance participation in the SCIP and the Investment Justification process.

Those who participated in this planning effort are largely responsible for its implementation, as a successful emergency response begins and ends with local responders. Having these key components will make the Arizona SCIP successful.

The PSCC

In addition, the Governor's Office created the PSCC and the Legislature codified its existence in Arizona statute (A.R.S. §41-1830.41 and §41-1830.42). The appointed members represent a variety of agencies and disciplines. The current commissioners of the PSCC can be found in Section 4.2.1 of this SCIP.

2.9. Statewide Plan Point of Contact

The state of Arizona has designated Mr. Curt Knight as its official POC. Mr. Knight is a full-time coordinator for the statewide interoperability plan, and the state anticipates establishing the full-time position of Interoperability Coordinator in the future. As a cornerstone for this position and its responsibilities, please see *Statewide Interoperability Coordinator: A Key to Success in Developing and Implementing Statewide Interoperability*, April 2007, prepared by DHS. This position will be at the "project manager" level and will be filled when funding becomes available. The current POC's contact information is:

- Mr. Curt Knight
- Executive Director
- Public Safety Communications Commission
- Mail Drop 3450
- PO Box 6638
- Phoenix, Arizona 85005-6638
- Telephone: 602.271.7400
- *Email:* *cknight@azdps.gov*

2.10. Scope and Timeframe

This SCIP provides an approach to achieve interoperability for Arizona's public safety radio system users. It provides for short- and long-term solutions to permit communications among public, private, commercial and non-profit, state, county, local, tribal, and federal entities.

2.10.1. Critical In Scope Components

This plan identifies the need for an interoperability governance structure under the PSCC's leadership. It also describes the ultimate solution, a standards-based, common-infrastructure radio system providing communications for state, local, tribal, and federal participating agencies. The plan allows for integrating existing systems and for linking the AIRS network to permit communications with non-participants and transient agencies (which may be agencies, including non-governmental entities that come into the area to provide mutual aid or assistance).

Out of Scope Components

PSCC's guidance has made the statewide interoperability scope very clear: components may be either part of the new statewide radio system, including high-level network connections to the statewide interoperability radio system, or part of the AIRS network. Working together, these systems ensure interoperability among state-level organizations and all jurisdictions operating within its borders.

Any system that does not have a way to connect with the statewide radio system or does not enable connectivity via AIRS is out of this plan's scope, as it only serves one agency or system.

Strategic Initiatives

The statewide plan's implementation schedule is discussed in depth under Section 6 of the SCIP and is dependent upon; the Strategic Goals and Objectives of this Plan outlined in Section 5.3 and the Strategic Initiatives can be found in Section 5.4 of this document. Contained in the Implementation Plan are a series of strategic initiatives designed to focus the statewide system. Included in the initiatives are completing: a Demonstration Project, the deployment of the existing AIRS suites, a statewide digital microwave system, and finally the 700 MHz radio system component of the statewide interoperability solution itself. As part of the PSIC funding, a Strategic Technology Reserve will be implemented in Arizona to augment what is already in place and provide the additional equipment the state needs today and for the foreseeable future.

Timeframe for Initiatives

Projected initiatives have been categorized by projected completion timelines (i.e. short- and long-term initiatives). Short-term initiatives are those initiatives projected for completion within three years of the acceptance of the SCIP. Medium-term initiatives will take between three and five years to complete, while long-term initiatives are those initiatives projected for

completion between six and eight years from the acceptance of the SCIP. Many initiatves will be ongoing and although will see phases completed, will last as long as this project will.

In 2008, two projects are scheduled for completion; the AIRS build-out, and the Demonstration Project. The first phase of the digital microwave is currently underway, with a scheduled completion date of 2009. The Demonstration Project is the first phase of the statewide 700 MHz radio system. In 2011, the second phase of the statewide microwave system is scheduled to be completed, along with the first phase of the 700 MHz radio system. Within this period, we anticipate having the high-level network connections designed, tested, and available to agencies that elect not to participate in the state 700 MHz radio system, but wish to connect to the state's infrastructure for interoperability. By January 1, 2013, the final phase of the statewide microwave system will be completed as will the 700 MHz radio system component of Arizona's statewide interoperability solution**,** and systems that want to connect to the statewide system will be able to do so. Additional information on the timeframe for goals and initiatives can be found in Sections 5.3 and 5.4

The plan calls for accomplishing several goals and strategic initiatives: governance, planning, technology, training, and system replacement. An implementation schedule was created, allowing for continued ongoing AIRS implementation that will be supported indefinitely. The first dates achieved in the timeframe will be the completion and adoption of this SCIP, which is scheduled to occur in late 2007. The short-term strategy encouraging pursuit of opportunities created by the PSIC grant process and continued build-out of the AIRS network is scheduled for the next two years.

The deployment of the long-term strategy, which includes the design, construction, and implementation of the PSCC long-term solution of a new 700-800 MHz digital trunked statewide radio system, is to be completed by January 1, 2013. Additional information is available in Section 5.

3. METHODOLOGY

Arizona has made a concerted effort to plan to achieve interoperability using an all-inclusive manner approach that started with an *ad hoc* group of like-minded individuals who had a vision of interoperability in Arizona. The PSCC began discussing the future of interoperable communications for the state with representatives of the public safety community of interest in 2001. A strategy started to emerge for interoperable communications. In 2004, the state Legislature established the PSCC as a Commission and the Governor appointed commissioners. As of July 2007, many of the original *ad hoc* committee members are now commissioners and remain active on the PSCC. Additional appointees have established the Commission's broad range of representation from jurisdictions, geography, and public safety disciplines and interest groups from across the state. The Commission has met regularly since early 2001[11] with meetings attended by all disciplines and levels of government, including representation from state, county, city, district, tribal, and federal, as well as any non-governmental entity, or interested party. This approach has allowed and encouraged local government and non-governmental organizations to participate in the interoperable communications planning process. Local representatives took an active role in the PSCC and SIEC and their sub-committees by participating in meetings, holding committee positions such as chairing a committee, drafting, reviewing, and editing several sections of this Plan.

The PSCC sponsored or participated in several studies performed by external consultants to help define its interoperable communications requirements in Arizona. The studies have included a needs assessment study, an interoperability gap study (by DEMA), and an ongoing system design and implementation project. The PSCC's requirements and future direction were derived from a sound analysis of public safety operational needs and philosophy established early on by the Commission in its *Concept of Operations* document published in October 2005. (The *Concept of Operations* document is available at http://www.azdps.gov/pscc/PSCCFinalConOps102605.pdf).

The information used to populate this plan was gathered through meetings, interviews, and document review. These documents and interviews represent all agencies operating in the state and further consider all public safety disciplines and all levels of government. Cross-jurisdictional and cross-discipline participation was achieved in several ways. First, state, county, city, district, tribal, and federal agency representatives attended PSCC meetings. In addition, practitioners at all levels of government were interviewed. Another example of multi-jurisdictional and multi-discipline cooperation and collaboration in the Arizona interoperable communication effort is the AIRS plan, which includes all public safety disciplines in all levels of government.

[11] http://www.azdps.gov/pscc/minutes/default.asp for the minutes of the meetings)11,

The Project Team reviewed the bodies of work done by the PSCC in previous years, which included:

- A study conducted by RCC Consultants identified the need to create an interoperability suite of radios (AIRS).
- *A statewide Needs Analysis* was conducted by the Macro Corporation.
- The *Statewide Wireless Public Safety Solution Concept of Operations (ConOps),* written by Gartner, Inc.

Arizona's methodology for the SCIP followed the many years of development of other plans in this state, with each asking for broad-scale input and comment. The SCIP and each report leading to the SCIP used the SAFECOM suggestion calling for a locally-driven approach to interoperability. The PSCC and SIEC inviting over 1,000 individuals representing every facet of the public safety community of interest to participate in this process is a testament to the state's desire to involve as many interested parties as possible in this process.

The SCIP process started with a high-level plan introduced at a statewide meeting in July 2007. As the state already had a vision for a statewide interoperable communications system, a first draft of the SCIP was prepared in preparation for the meeting. Representatives of the ICTAP, who also analyzed the plan, facilitated the meeting.

Drafts of the SCIP were posted on the PSCC and SIEC websites and all local, tribal, federal, and non-governmental public safety entities were offered an opportunity to participate in the development of this plan by providing comment and participation in forums and interviews. The plan became the basis of the PSIC grants, and, each of the state's RACs was given copies of the plan, and they too were asked to participate in this process. Each of the state's EOCs were asked to participate in provide information for this SCIP, with their responses representing over 90 percent of the state's population. The contributions by these agencies and individuals were important to each of the plans created by the PSCC. Their continued support will be vital to the success of this plan.

In August 2007, the PSCC contracted with a team of consulting companies to assist in developing the SCIP. Data Site Consortium, Inc. is the prime contractor who subcontracted Federal Engineering to assist the PSCC with the SCIP. Science Applications International Corporation (SAIC) was added to the team for quality assurance and technical assistance.

The first meeting with members of the SIEC was held to discuss the plan and to obtain additional information from the Committee. An updated plan was sent to ICTAP who provided its feedback to the PSCC. Copies of the draft SCIP were placed on a website and the community of interest was asked to review, and comment on the plan.

On August 15, 2007, a kickoff meeting between the Federal Engineering Project Team and the SCIP team was held in Phoenix, during which PSCC and SIEC shared all available information with the Project Team. The Project Team began interviewing key individuals to determine the immediate goals and objectives of the PSCC, SIEC and the community of interest. The project began with assembling all available reports the PSCC and others had completed previously to

help understand the effort's status and the steps Arizona had taken to that point. These studies identified the state's needs as well as the needs of local, tribal, and non-governmental officials who may use the state's radio system in times of emergency.

After reviewing the information and conducting a preliminary set of interviews, the team created a *Gap Analysis and Closure Plan* outlining what was required to complete the SCIP.

Based mostly on the work done by the PSCC previously, the work of other external resources, and preliminary interviews, a draft SCIP was developed and sent to ICTP for review. On August 31, 2007, ICTAP began reviewing the draft plan. ICTAP completed its review on September 14, 2007 and its feedback has been incorporated into the plan.

As the draft of this plan was being reviewed by ICTAP, another draft was presented to the PSCC and the community of interest. Additionally, surveys were conducted with Emergency Operations Centers throughout Arizona. Participation in these surveys represented over 90 percent of the population of the state. The draft SCIP (submitted September 11, 2007) was placed on the PSCC website and a message was sent to the email distribution lists asking for input, review, and comment on the document. SAIC reviewed the September 11 draft and compared its findings to ICTAP's and submitted a report with its suggestions and recommendations.

After the review process described above, a draft of the SCIP was sent to the U.S. Department of Homeland Security (DHS) on September 28 for review. This draft document was also placed on the PSCC website.

Thereafter, additional forums were conducted, one in September, one in October 2007, and the last one in November 2007. These public meetings were advertised, and open to any interested party. After each meeting, edits to the SCIP were made and the edited SCIP was placed on the website to ensure it was available to the largest audience possible for review

The next draft of the SCIP included DHS feedback as well as that from others who sent their comments to the PSCC. Draft number 0.7 was vetted at the October PSCC and SIEC meetings; additional comments and suggestions were gathered and for the PSCC's November 20th meeting. At that time, the PSCC agreed to hold a Special Meeting on November 28 to review the final draft of the SCIP. On November 28, 2007, the SCIP Version 1.0 was approved by the PSCC.

3.1. PSIC Grants Considered in Support of Statewide Planning

As outlined in Section 7 of this plan, all funding through this PSIC grant will be in support of the statewide communications plan. This was accomplished by creating an Interoperability Working Group whose job it was to review all grant applications to ensure only those in compliance with the statewide plan are considered. Section 5.3 and 5.4 describes the strategic goals and initiatives of the state, including the expansion of the Strategic Technology Reserve. The following process was used to ensure that grant funds would align with state goals and objectives and follow PSIC grant requirements.

The State Administrative Agency (SAA) for the State of Arizona is the Arizona Department of Homeland Security (AZDOHS). The AZDOHS has solicited input from state, local, and tribal public safety agencies and authorized nongovernmental organizations via briefings to the Arizona Homeland Security Regional Advisory Councils (RAC). The Arizona Public Safety Communications Commission developed the key goals and components of the Statewide Plan and the Executive Director of the Commission presented an overview of the Plan's key features at meetings in each of the State's five regions.

In addition, the AZDOHS sent emails to public safety stakeholders, posted grant solicitation information on their website and facilitated teleconferences with appropriate entities.

To solicit Investment Justifications, the AZDOHS used an application format that local jurisdictions and state agencies are familiar with and have previously used in the Homeland Security Grant Program application process. This tool (Application Workbook) served a similar function as the Investment Justification template.

The Application Workbooks were developed with information specific to Arizona's Statewide Plan based on federal PSIC guidance. The Workbook submissions will gave AZDOHS information necessary to determine how eligible jurisdictions are able to support the Statewide Plan and what mechanisms are necessary to ensure interoperability within their areas and throughout the State. The Workbook included provisions to ensure applicants are familiar with the 20 percent matching requirement.

As part of the application process, AZDOHS also requested, in writing, applicable MOUs for state management of local funds.

After the Workbooks were received, the AZDOHS worked with the lead agency (Department of Public Safety/Public Safety Communications Commission) responsible for the Statewide Communications Interoperability Plan on a review of the submitted Workbooks. This review assisted the AZDOHS in determining the critical connection of Workbook applications to required elements in the Statewide Plan based on federal guidance for the PSIC project.

The Interoperabilty Working Gorup convened to review each of the requests for funding to ensure aligned with the SCIP. This working group made their recommendations to the AZDOHS.

The RACs reviewed the Application Workbooks and made their recommendations to the AZDOHS Director pursuant to A.R.S § 41-4258. A list of the recommended projects was forwarded to the State Homeland Security Coordinating Council for comment.

Once the reviews and recommendations were completed, the AZDOHS Director made the final decision on the projects to be submitted as part of the Investment Justification package.

The summarized Application Workbook information was synthesized into the State's Investment Justification narratives, including any new required MOUs obtained for specific project(s). The Investment Justifications and Portfolio were submitted to the Department of Homeland Security for approval.

3.2. Continued Plans for Local Input

The SCIP is a dynamic, living document. It was created with local, tribal, and federal entity input but needs to include non-governmental organizations i.e., EMS, healthcare and volunteer organizations such as the American Red Cross and others. The SCIP will survive only with continued regular input and feedback from those that will make use of it. The SCIP will be reviewed not less than once a year, and will be reviewed more often if there is a significant change in technology, or direction of the PSCC. Incorporation of the updated TIC plans will also be required (see Section 3.3). The process for SCIP review is outlined in Section 5.6 of this document.

3.3. Consideration of TIC Plans

As the Phoenix TIC Plan was created prior to this plan, this SCIP incorporated many of the requirements and technologies of the Phoenix TIC Plan. The Arizona SCIP complements the Phoenix UASI's TIC Plan as they both deploy a Project-25, standards-based radio system. While Phoenix uses an 800 MHz system and the state will deploy a 700 MHz system, both systems will be fully interoperable, as the newer 800 MHz systems are both 700 and 800 MHz compatible. Additionally, the first phase of the state planned 700 MHz radio system (the Demonstration Project) will include the use of the Phoenix UASI infrastructure to support the state's 700 MHz radios.

As Tucson has recently become a UASI region, they do not have a TIC Plan. The Tucson UASI is planning to deploy an 800 MHz Project-25 radio system, similar to the Phoenix radio system. The statewide radio system will have the capability of linking to each of these radio systems and creating immediate interoperable communications.

As both the Phoenix and Tucson UASI have members that are also members of the PSCC and the SIEC, plans are in place to ensure that the SCIP and the TIC Plans are always aligned with each other, and members of each committee and commission are informed of one another's actions.

4. CURRENT STATEWIDE ASSESSMENT

In an effort to create an assessment of Arizona to use as a baseline to indicate the state's level of interoperability, we used the SAFECOM Interoperability Continuum, as shown in Figure 11.

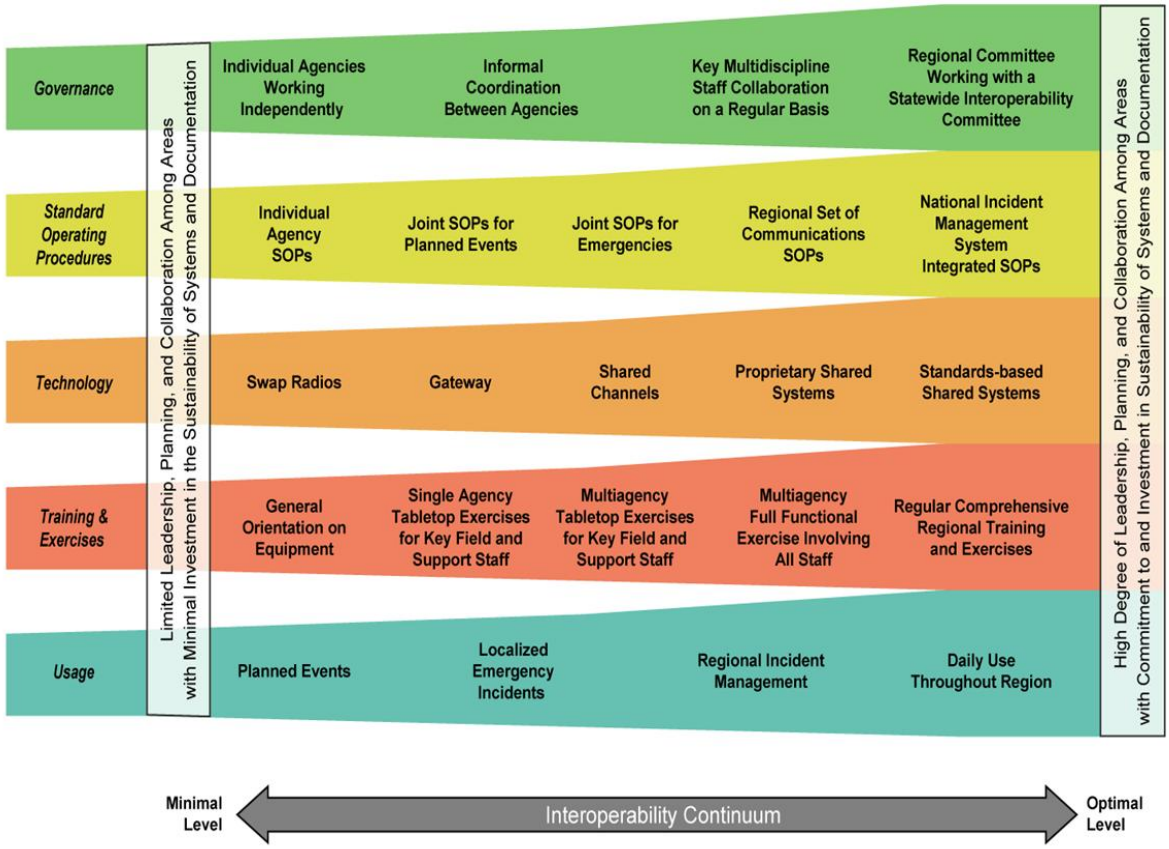

Figure 11 - SAFECOM CONTINUUM[12]

4.1. OVERVIEW OF ASSESSMENT

4.1.1. GOVERNANCE

The Arizona PSCC is legislatively enabled and has oversight of statewide interoperability. This, along with the SIEC and the inter-regional working groups such as the RAC's give Arizona the highest possible level of governance when using the SAFECOM Continuum as a baseline.

[12] http://www.safecomprogram.gov/SAFECOM/Tools/Continuum/continuum.htm

4.1.2. SOPs

All SOPs in the state are NIMS-compliant and are integrated into MOUs (see Section 5.5). To that extent, the state also achieves the highest possible rank on the SAFECOM Continuum. SOPs for the most part are local government-driven, with relatively few that reach the state level of operations. As SOPs are local, and all comply with their local ordinances and the Governor's Executive Order EO2005-08 to comply with NIMS, local governments also score at the highest level of NIMS-compliance.

4.1.3. TECHNOLOGY

Today, interoperability varies from agency to agency and from user to user. Most have AIRS (or its predecessor the Interagency Arizona Radio System (IARS)) channels in their radios, meeting the "Shared Channels" level of the SAFECOM Continuum. Most counties in Arizona also have "gateway" units, either mobile or at communications centers where dispatching takes place or at EOCs, meeting the "Gateway" interoperability definition. Fire services and law enforcement agencies have caches of radios to exchange during special operations, large wildfires, or task force operations, meeting the "Swap Radios" SAFECOM Continuum interoperability level.

Tables 16 - 19 list emergency response agencies that own and operate their own radio systems. Table 20 compiles information from Tables 16-19 to show spectrum usage within the state's emergency responder agencies.

County Sheriff Radio Frequency Bands					
COUNTY	**VHF CONV**	**UHF CONV**	**800 CONV**	**800 TRUNK**	**800 P-25**
APACHE	X				
COCHISE	X				
COCONINO	X				
GILA	X				
GRAHAM	X				
GREENLEE	X				
LA PAZ	X				
MARICOPA			X		
MOHAVE	X				
NAVAJO	X				
PIMA			X		
PINAL	X				
SANTA CRUZ	X				
YAVAPAI	X				
YUMA					X

Table 16 - COUNTY SHERIFF FREQUENCY BANDS

City Agency Frequency Bands					
CITY (BY COUNTY)	**VHF CONV**	**UHF CONV**	**800 CONV**	**800 TRUNK**	**800 P-25**
APACHE					
EAGAR	X				
SPRINGERVILLE	X				
ST. JOHNS	X				
COCHISE					
BENSON	X				
BISBEE	X				
DOUGLAS	X				
HUACHUCA CITY	X				
SIERRA VISTA	X				
TOMBSTONE	X				
WILLCOX	X				
COCONINO					
FLAGSTAFF	X			X	
FREDONIA	X				
PAGE	X				
SEDONA	X	X			
WILLIAMS	X				
GILA					
GLOBE	X				
HAYDEN					
MIAMI	X				
PAYSON	X				
GRAHAM					
PIMA	X				
SAFFORD	X				
THATCHER	X				
GREENLEE					
CLIFTON	X				

City Agency Frequency Bands (Continued)					
CITY (BY COUNTY)	**VHF CONV**	**UHF CONV**	**800 CONV**	**800 TRUNK**	**800 P-25**
LA PAZ					
PARKER	X				
QUARTZSITE	X				
MARICOPA					
AVONDALE	X				
BUCKEYE		X			
CHANDLER				X	
EL MIRAGE		X			
GILBERT					X
GLENDALE				X	
GOODYEAR		X			
MESA					X
PARADISE VALLEY	X				
PEORIA		X			
PHOENIX					X
SCOTTSDALE			X		
SURPRISE				X	
TEMPE				X	
TOLLESON			X		
WICKENBURG	X				
YOUNGTOWN	X				
MOHAVE					
BULLHEAD CITY	X				
COLORADO CITY	X				
KINGMAN	X				
LAKE HAVASU			X		
NAVAJO					
HOLBROOK	X				
PINETOP-LAKESIDE	X				
SHOW LOW	X				
SNOWFLAKE-TAYLOR	X				
WINSLOW	X				
PIMA					
MARANA				X	
ORO VALLEY	X				
SAHUARITA				X	

City Agency Frequency Bands (Continued)					
CITY (BY COUNTY)	**VHF CONV**	**UHF CONV**	**800 CONV**	**800 TRUNK**	**800 P-25**
SOUTH TUCSON	X				
PIMA (Continued)					
TUCSON	X	X			
PINAL					
APACHE JUNCTION	X				
CASA GRANDE	X				
COOLIDGE	X				
ELOY	X				
FLORENCE	X				
KEARNY	X				
MAMMOTH	X				
SUPERIOR	X				
SANTA CRUZ					
NOGALES	X				
PATAGONIA	X				
YAVAPAI					
CAMP VERDE	X				
CHINO VALLEY	X				
CLARKDALE	X				
COTTONWOOD	X				
JEROME	X				
PRESCOTT	X				
PRESCOTT VALLEY	X				
SEDONA	X	X			
YUMA					
SAN LUIS					X
SOMERTON					X
WELLTON	X				
YUMA					X

Table 17 - CITY FREQUENCY BAND BY COUNTY[13]

[13] Information reported in this Tables 17-20 comes from Macro *Needs Assessment Report* as amended by input from participating agencies.

Fire District Frequency Bands					
FIRE DISTRICT	VHF CONV	UHF CONV	800 CONV	800 TRUNK	800 P-25
AGUILA	X				
ALPINE	X				
APACHE JUNCTION	X				
ASHFORK					
AVRA VALLEY	X				
BABOCOMARI					
BOWIE	X				
BEAVER VALLEY	X				
BLACK CANYON	X				
BLUE RIDGE	X				
BUCKEYE VALLEY	X				
BUCKLEY	X				
BUCKSKIN	X				
BULLHEAD CITY	X				
CAMP VERDE	X				
CENTRAL HEIGHTS					
CENTRAL YAVAPAI	X				
CHANDLER	X				
CHINO VALLEY	X				
CHLORIDE	X				
CHRISTOPHER KOHLS					
CIRCLE CITY-MORRISTOWN	X				
CLAY SPRINGS-PINEDALE	X				
COLORADO CITY	X				
CONGRESS	X				
CORNVILLE-PAGE SPRINGS					
CORONA DE TUCSON		X			
CROWN KING	X				
DAISY MOUNTAIN	X				
DESERT HILLS					
DIAMOND STAR					
DONEY PARK	X				
DREXEL HEIGHTS		X			
DUDLEYVILLE	X				
DUNCAN VALLEY					
EAST VERDE PARK					
EHRENBERG	X				
EL MIRAGE	X				
ELFRIDA		X			
ELOY	X				
FOREST LAKES	X				
FORT MOHAVE	X				
FORT VALLEY	X				
FOUNTAIN HILLS	X				

Fire District Frequency Bands (Continued)					
FIRE DISTRICT	VHF CONV	UHF CONV	800 CONV	800 TRUNK	800 P-25
FRY					
GANADO	X				
GILA BEND					
GISELA VALLEY	X				
GLENDALE					
GOLDEN SHORES					
GOLDEN VALLEY	X				
GOLDER RANCH	X				
GOODYEAR	X				
GRAPEVINE MESA	X				
GREEN VALLEY	X				
GREENHAVEN	X				
GREER	X	X			
GROOM CREEK	X				
HARQUAHALA VALLEY	X				
HEBER-OVERGAARD	X				
HELMET PEAK	X				
HIGHLANDS	X				
HUALAPAI VALLEY					
JOSEPH CITY	X				
JUNIPINE	X				
KAIBAB ESTATES	X				
LA CANADA					
LAKE MOHAVE RANCHOS	X				
LAKESIDE	X				
LAVEEN	X				
LINDEN					
MAMMOTH	X				
MARICOPA	X				
MAYER	X	X			
MESA DEL CABALLO					
MOHAVE VALLEY	X				
MONTEZUMA-RIMROCK	X				
MORMAN LAKE	X				
MOUNT ELDON	X				
MT. LEMMON		X			
NACO	X				
NOGALES SUBURBAN	X				
OATMAN		X			
ORACLE VOLUNTEER					
PALO VERDE	X				
PARKER					
PARKS-BELLEMONT	X				
PBW					
PEEPLES VALLEY	X				

Fire District Frequency Bands (Continued)					
FIRE DISTRICT	VHF CONV	UHF CONV	800 CONV	800 TRUNK	800 P-25
PEORIA	X				
PHOENIX	X				
PICTURE ROCKS	X				
PIMA RURAL					
PINE DELL	X				
PINE LAKE	X				
PINE-STRAWBERRY	X				
PINETOP	X				
PINEWOOD	X				
PINION PINE	X				
PLEASANT VALLEY	X				
PUERCO VALLEY		X			
QUARTZSITE	X				
QUEEN VALLEY	X	X			
RINCON VALLEY		X			
RIO RICO	X				
RIO VERDE					
SABINO VISTA					
SAFFORD RURAL	X				
SALOME	X	X			
SAN MANUEL	X	X			
SEDONA	X				
SELIGMAN	X				
SHERWOOD FOREST ESTATES	X				
SHOW LOW	X				
STANFIELD	X				
SUN CITY	X	X			
SUN CITY WEST	X				
SUN LAKES	X	X			
SUNNY SIDE					
SUNSITES-PEARCE		X			
TEMPLE	X				
THREE POINTS	X				
TIMBERLINE-FERNWOOD	X				
TOLLESON	X				
TONOPAH VALLEY	X				
TONTO BASIN	X				
TONTO VILLAGE					
TRI-CITY					
TRUXTON					
TUBAC		X			
TUCSON C.C. ESTATES					
TUCSON ESTATES					
TUSAYAN	X				

Fire District Frequency Bands (Continued)					
FIRE DISTRICT	VHF CONV	UHF CONV	800 CONV	800 TRUNK	800 P-25
VALLEY VISTA					
VERDE VALLEY	X				
WHETSTONE					
WHISPERING PINES	X				
WHITE MOUNTAIN LAKE	X				
WHY	X				
WICKENBURG RURAL	X				
WITTMAN	X				
WOODRUFF					
YARNELL	X				
YUCCA	X				

Table 18 - FIRE DISTRICT FREQUENCY BANDS

Tribal Agencies Radio Frequency Bands					
TRIBAL NATION	VHF CONV	UHF CONV	800 CONV	800 TRUNK	800 P-25
AK-CHIN		X			
COCOPAH					X
COLORADO RIVER	X				
FORT MCDOWELL	X				
FORT MOHAVE	X				
GILA RIVER			X		
HOPI RESOURCE	X				
HUALAPAI	X	X			
NAVAJO DPS	X	X			
PASCUA YAQUI	X				
QUECHAN	X				
SALT RIVER	X	X			
SAN CARLOS	X	X			
TOHONO O'ODHAM		X			
WHITE MTN APACHE	X				
YAVAPAI-PRESCOTT	X				
YAVAPAI-APACHE	X				

Table 19 - TRIBAL AGENCY FREQUENCY BANDS

Summary of Radio Bands Used by Arizona Agencies					
ENTITY	VHF CONV	UHF CONV	800 CONV	800 TRUNK	800 P-25
STATE AGENCIES	7	5	1	1	0
COUNTY SHERIFFS	12	0	2	0	1
CITIES	59	7	4	7	6
FIRE DISTRICTS	103	16	0	0	0
TRIBAL NATIONS	13	6	1	0	1
TOTALS	194	34	8	8	8

Table 20 - RADIO FREQUENCIES USED IN ARIZONA

In the Phoenix-Mesa metropolitan area and in Yuma County, 800 MHz Project-25 systems provide "Standards-based, Shared Systems" level interoperability. Pima County is moving to a standards-based shared system as well.

The state agencies within Arizona are currently interoperable with most other jurisdictions through the AIRS suite of interoperability channels. This provides a rudimentary level of interoperability, as it allows one talk path for emergency operations in any area of the state. AIRS requires dispatcher control to activate the stations. According to the SAFECOM Continuum, this level of interoperability is considered "Shared Channels" however, AIRS is limited to a single channel per region. Arizona is looking to the future, creating a fully interoperable 700 MHz standards-based Project-25 radio system that will enable all emergency responders to communicate with each other when required and in real time (without the interaction of a dispatcher). Once the 700 MHz system is deployed as a component of the state's solution, the interoperability level will become the "Standards-Based, Shared Systems" as defined in the Continuum.

The Regional Planning Committee (RPC) in Arizona, chaired by Mr. Mark Schroeder from the City of Phoenix Fire Department, has planning authority over the general use channels if the 700 MHz band. The interoperability channels fall under the authority of the SIEC, as does the VHF and UHF interoperability frequencies. The state's 700 MHz frequencies fall under the authority of the Department of Public Safety, Mr. Curt Knight.

4.1.4. Training and Exercises

Arizona has an extensive training program that crosses all jurisdictions and is multi-disciplinary. The training program is cyclic, thus creating a plethora of training opportunities for all state, local, and tribal entities. The state participated in the TOPOFF-4 (TOPOFF is a Top Officials exercise to test readiness) exercise and observed the TOPOFF-3 exercise. (Additional information about the TOPOFF-4 exercise is available in Section 4.4 of this report.) Because of these extensive training and outreach programs, Arizona has achieved the highest training and exercises rating possible using the SAFECOM Continuum.

4.1.5. Usage

AIRS is used routinely by many jurisdictions to achieve interoperability. Because of the technology used in AIRS, there is no way to gather usage statistics. When surveying local law enforcement responders, they advise they use AIRS when they need it, but could not give any details regarding how often they access it. We do believe, however, the use of AIRS is more often for localized emergency incidents than regional interoperability. As AIRS is still being constructed throughout the state, we believe that its use will increase as its availability increases.

Local governments report that the use of interoperable communications is routine and developed on a jurisdictional level rather than an over-arching statewide process. Table 34 in Section 4.5.1 evidences this local interoperability design. Because of the local government's efforts, they are for the most part interoperable with those that they rely on for day-to-day and most emergencies. When the local government's needs are beyond their capacity, they typically contact the DEMA who coordinates the use of one of the communication vans that is part of the state's Strategic Technology Reserve.

4.1.6. Interoperability Challenges

In addition to the "normal" challenges for interoperable communications: money, governance, and technology, the state faces several unique challenges. The size and terrain of the state present special challenges, and the fact that a large area of the state is uninhabited presents additional challenges not normally experienced by most states. These two factors increase the fiscal impacts of a statewide interoperable radio system substantially. As with all other statewide systems, cost and governance are always problematic.

Each challenge identified above has specific strategies that should increase the likelihood of mitigating issues associated with them.

4.1.6.1. Funding

Funding is a challenge facing all large radio systems. They are expensive to build and maintain, and until there is a need for them, they often do not appear as a priority. The PSCC has been leading the way for the past seven years in bringing interoperable communications to the forefront of the public safety community in Arizona. Additionally, they have worked with the Governor and the State Legislature to ensure the needs of the state and the public safety community is understood. As the full costs of the statewide interoperability solution are developed, the PSCC will begin working on a comprehensive funding plan. As the inroads to the Governor and Legislature are established, it is anticipated that this will help enable a smooth process for a funding solution.

4.1.6.2. GOVERNANCE

Governance for interoperable communications is generally problematic for many entities at both the state and local levels. The problem occurs as local entities start looking for alternatives for communications issues. Arizona has enabled legislatively the PSCC to be the Commission that is to govern interoperability in the state. The PSCC recommends a system of systems approach for infrastructure and the statewide plan is beyond the original intent of the PSCC legislation (for interoperable communications). A new governance process is required to ensure cooperation and coordination between all those who may wish to participate in the statewide radio system.

To enable the governance to change from its present form, the PSCC created a governance committee chaired by the PSCC Chairman. This committee will begin their work in early 2008. The intent of this committee is to create a "straw-man" governance model and vet it to the widest community of interest possible. The committee will be comprised of public safety officials involved with the operation and/or governance of wireless communications systems that will work in concert with the statewide 700 MHz radio system, as well as including other stakeholders who express a commitment to work on the project. This sub-committee will discuss a series of important issues including, funding, outreach, management, maintenance, voting rights, bylaws, etc., of the interoperability system. The PSCC will review the group's recommendations and take action to revise or adopt, as appropriate.

4.1.6.3. TECHNOLOGY

Technology is another problem that many states have struggled with concerning interoperability. Seven years ago, Arizona began the journey of developing a technical approach towards interoperability. After a series of studies, the PSCC recommended that the state create a system of systems approach to interoperability. These systems will include the use of a digital microwave backbone in support of each of the technologies deployed, including a statewide 700 MHz radio system, a series of high-level network connections (for those entities not joining the statewide radio system), and the support of AIRS for statewide and inter-state interoperability needs.

4.1.6.4. SIZE, TERRAIN, AND POPULATION DENSITY

These issues are all related to each other. Arizona is the sixth largest state in the country, yet only 20 percent of its landmass is populated. As a result, investments in technologies that will not be used are not efficient. The Governor stated that her intent was to have 85% of the state's population covered by interoperable communications system within two years. This can be accomplished by the technology that has been chosen for the state interoperability platforms. In those areas of the state, where there is little or no population, interoperability will be initially achieved by the AIRS deployment. Where AIRS is not available, the Strategic Technology Reserves can be deployed in emergenices.

In Arizona, the PSCC takes the governance lead and has done so for the past seven years. This group is generally well-trusted by most public safety officials in the state. The PSCC must continue to garner support for their efforts from the public and legislators who face the ongoing challenge of allocating limited funds to a wide range of well-deserving causes in addition to public safety.

4.1.7. Developing Technology and Initiatives

To remedy existing interoperability shortfalls, the following key strategies have been adopted:

4.1.7.1. AIRS Deployment

The state has been building out the AIRS radio network, based on its predecessor Interagency Arizona Radio System (IARS). Originally planned and built in the early 1980s, IARS served the law enforcement community by providing VHF and UHF base stations at key locations. These stations could be linked together to allow VHF users to communicate with UHF users. As the system developed, some sites were also equipped with 800 MHz repeaters. A total of 17 sites were in operation in 1999, as shown in Table 21.

The IARS concept was modernized and expanded using DHS funds in 2006 and 2007, becoming AIRS. Where IARS had only VHF and UHF stations at each site AIRS uses base station "suites" composed of one wideband VHF, one narrowband VHF, one UHF, and one 800 MHz base stations/ repeaters. Like IARS, each radio connects to a supporting dispatch center via a microwave system.

The original IARS implementation had each radio controlled separately by the dispatch center. AIRS was implemented before the state microwave system upgrade was complete, and there was not enough microwave channel capacity to control each of the four radios in all the suites individually. Therefore, most of the sites are wired to connect the wideband VHF, the UHF, and the 800 MHz radios together, so what is received by one station is retransmitted by the other stations. This "cross-band repeater" configuration requires only one control channel per suite (or per site) to control it from dispatch.

There were approximately 40 sites selected for AIRS implementation. Of those 40 sites, 30 are installed and operational and the remaining sites will be installed and made operational with existing funding. In order to maximize the use of the AIRS equipment, the AIRS system requires upgrades to the state microwave systems upgrading receiver voting systems, antenna combining, and console control equipment to make it fully operational as designed.

The sites noted in Table 21 are those that were built into the AIRS design in 1999 (when this system was known as IARS). The locations of these sites have not changed since 1999 and are presented in Table 21.

IARS Radio Sites			
COUNTY	**SITE**	**MONITORED BY**	**COMMENTS**
Apache	Greens Peak	Navajo Sheriff's Dept.	
Cochise	Mule Mountain	Cochise Sheriff's Dept.	Backup at Tucson DPS
Coconino	Mount Elden	Coconino Sheriff's Dept.	
	Bill Williams Mountain	Coconino Sheriff's Dept.	
Gila	none		
Graham	Heliograph Peak		Backup at U of AZ P.D.
Greenlee	Guthrie Peak		Backup at Tucson DPS
La Paz	none		
Maricopa	South Mountain	Maricopa Sheriff's Dept.	Part of MCSO system
	White Tank Mountain	Maricopa Sheriff's Dept.	Part of MCSO system
	Thompson Peak	Maricopa Sheriff's Dept.	Part of MCSO system
	Towers Mountain	Maricopa Sheriff's Dept.	Part of MCSO system
Mohave	Hualapai Mountain	Mohave Sheriff's Dept.	
Navajo	Greens Peak	Navajo Sheriff's Dept.	
Pima	none		
Pinal	none		
Santa Cruz	Nogales Hill	Santa Cruz Sheriff's Dept.	Backup at Tucson DPS
Yavapai	Towers Mountain	Maricopa Sheriff's Dept.	Part of MCSO system
Yuma	Telegraph Pass	Yuma Sheriff's Dept.	
	Oatman Mountain	Yuma Sheriff's Dept.	
	Childs Mountain	Yuma Sheriff's Dept.	

Table 21 - IARS RADIO SITES IN 1999[14]

[14] Table 21 taken from the 1999 version of the *IARS State Plan*

AIRS SITES			
MOHAVE	NAVAJO/ APACHE	PIMA	MARICOPA
Christmas Tree Willow Beach Hualapai Mountain Lake Havasu City	Piney Hill Greens Peak Holbrook	Mt. Lemmon Keystone	White Tank Mtn South Mountain Towers Thompson
COCONINO	GRAHAM/GREENLEE/COCHISE	YAVAPAI	YUMA
Navajo Mountain Bill Williams Mount Elden Schnebly Hill	Guthrie Peak Heliograph Peak Mule Mountain	Mingus Mountain Squaw Peak	Childs Mountain Oatman Mountain Telegraph Pass
	GILA/PINAL	SANTA CRUZ	
	Signal Peak	Nogales Hill	

Table 22 - AIRS SITES[15]

Figures 12 through 15 depict the current and proposed AIRS VHF and VHF and 700/800 MHz system coverage areas. Current coverage is from the 28 sites in service on VHF and 700/800 MHz. Proposed coverage represents system improvements if an additional 13 sites are added in key areas.

[15] Table 22 taken from the 1999 version of the *IARS State Plan*

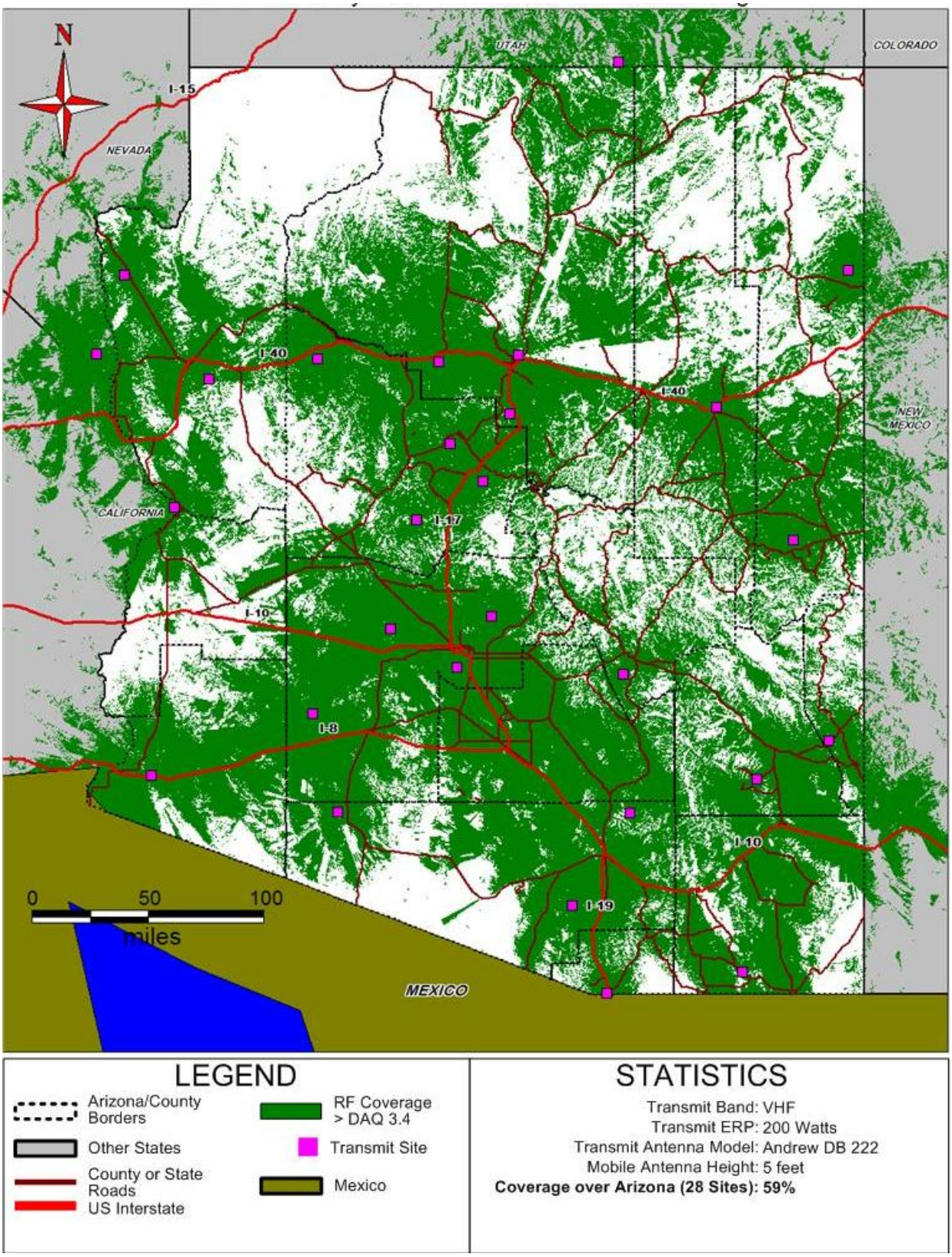

Figure 12 - CURRENT AIRS SYSTEM - VHF MOBILE TALK-OUT COVERAGE

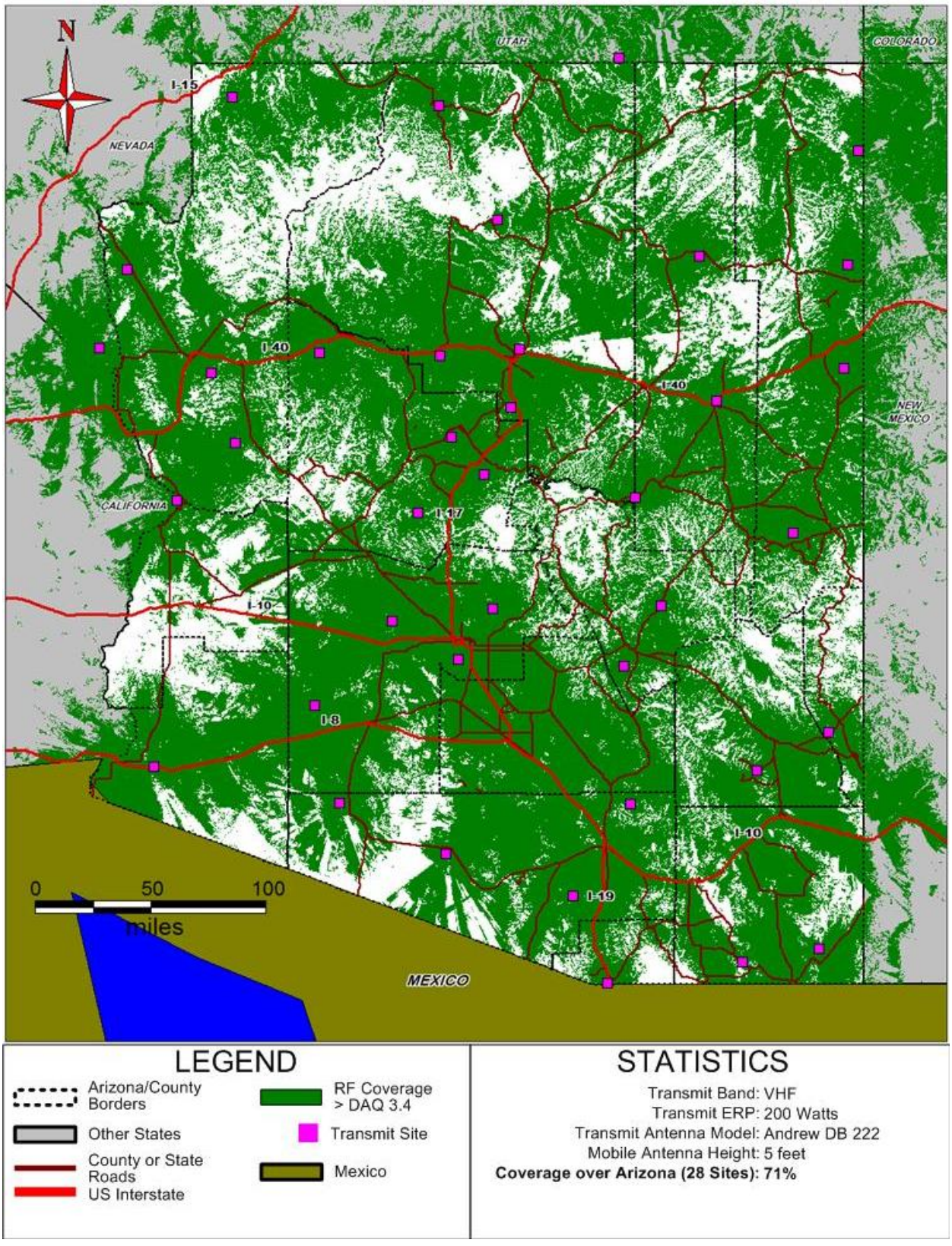

Figure 13 - FUTURE AIRS SYSTEM VHF MOBILE TALK-OUT COVERAGE

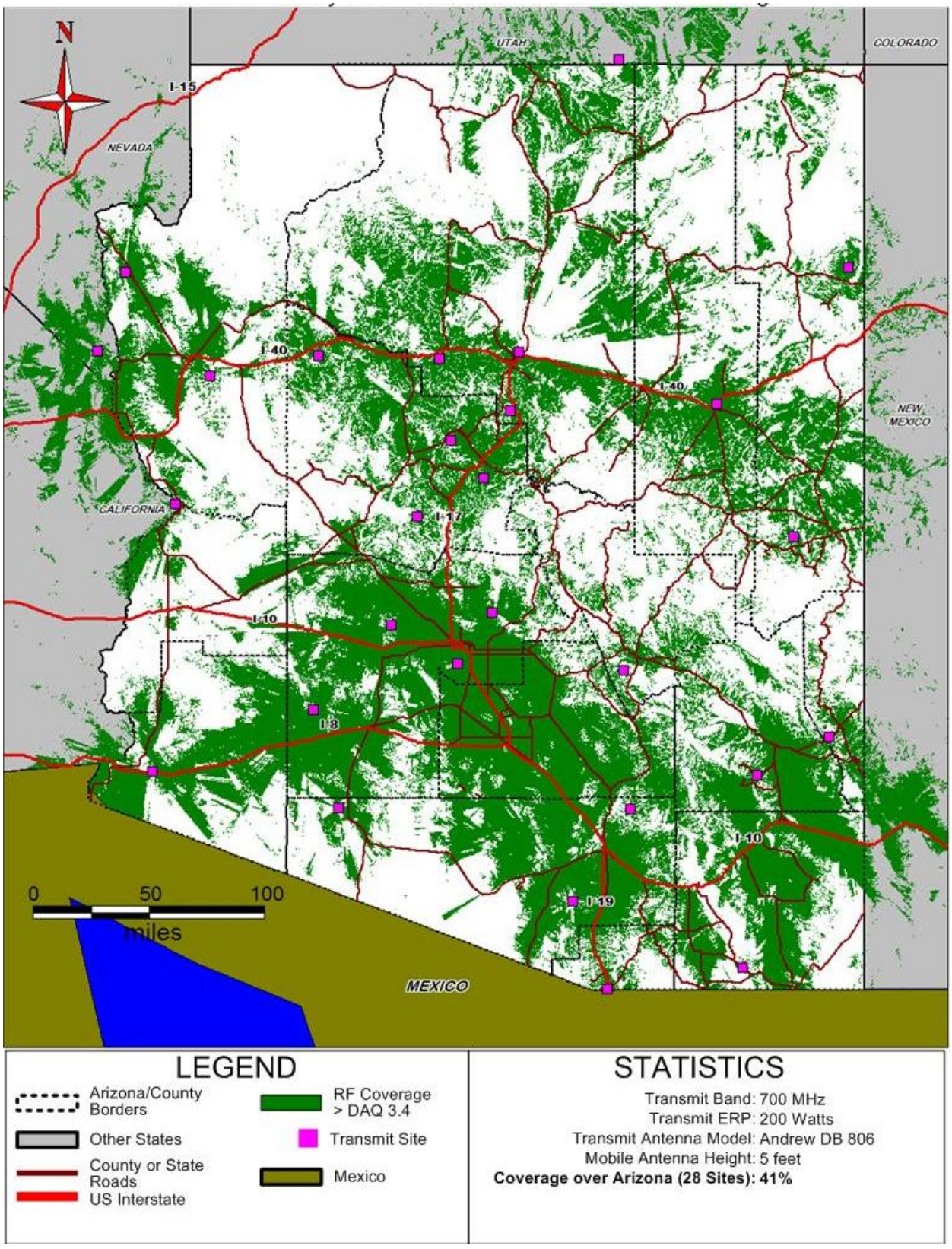

Figure 14 - CURRENT AIRS SYSTEM 800 MHZ MOBILE TALK-OUT COVERAGE

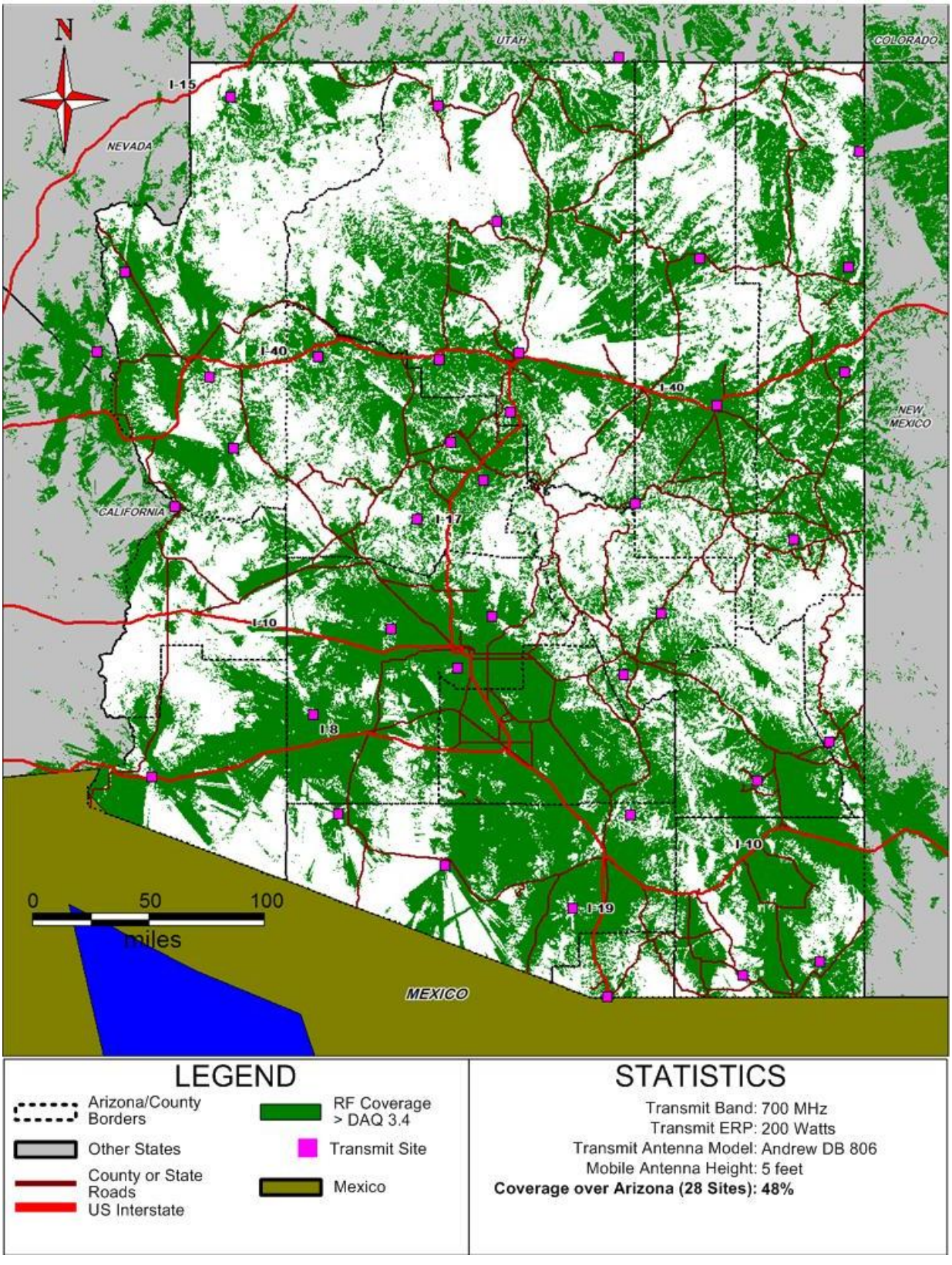

Figure 15 - FUTURE AIRS SYSTEM 800 MHZ MOBILE TALK-OUT COVERAGE

The PSCC and SIEC have issued standards and plans outlining how the AIRS channels should be placed into agency radio units as well as the recommended features and capabilities for all future radio purchases. (The *AIRS Plan* can be accessed at http://www.azdps.gov/pscc/documents/AIRSPolicy.2.2.07.pdf.)

4.1.7.2. Frequency Agile Gateways

Most, if not all, of the counties have radio gateway units. A gateway, also known as a "matrix switch," allows a radio on one channel to be connected to a radio on another channel, effectively "patching" the communications of the two channels together. The units (including the switch and the radios) supplied by the state were mounted in mobile vans or installed at fixed locations.

4.1.7.3. State Microwave System Upgrade

The state's current microwave network has evolved over the last fifty years to interconnect radio sites located across Arizona with dispatch centers and other facilities. The current system is composed of 84 paths, each connecting two locations. These links range in length from a few miles to over 130 miles, with an average of about 42 miles. In total, the links add up to 3,562 miles, or the distance from Washington, D.C. to Phoenix and back.

The microwave network is used mostly to control radio base stations at remote communications sites as described above and may be used to carry computer data and telephone signals. The state of Arizona microwave network connects 57 remote sites with 19 facilities.

Although originally built to support the Arizona DPS and other state agency land mobile radio system, many other agencies today use a portion of its capacity. Some of these agencies are listed in Table 23.

State, Local and Federal Agencies Using Microwave Backbone		
AZ Highway Patrol	Dept of Agriculture	Governor's Security
ADOT Maintenance	NOAA/Weather Service	ADOT Construction
AZ Game & Fish	State Land & Forestry	State Parks
Dept of Corrections	Capitol Security	Army National Guard
Dept of Emergency Management	Drug Enforcement Agency	ADOT Motor Vehicle Division
Federal Bureau of Investigation	Every County in Arizona	Bureau of Land Management
Yavapai Fire District	US Coast Guard	Sedona Fire District
US Army Proving Ground	DPS Criminal Investigations	AZ EMS Communications
US Game and Fish	US Customs and Border Protection	

Table 23 - STATE, LOCAL, AND FEDERAL AGENCIES USING MICROWAVE BACKBONE

Currently, about 13 microwave links were upgraded to digital paths, connecting approximately 19 sites and facilities.

Figure 16 shows the existing microwave system. A more detailed and clearer designed map is available to authorized personnel by contacting the Arizona Department of Public Safety, Wireless Systems Bureau, Phoenix, Arizona.

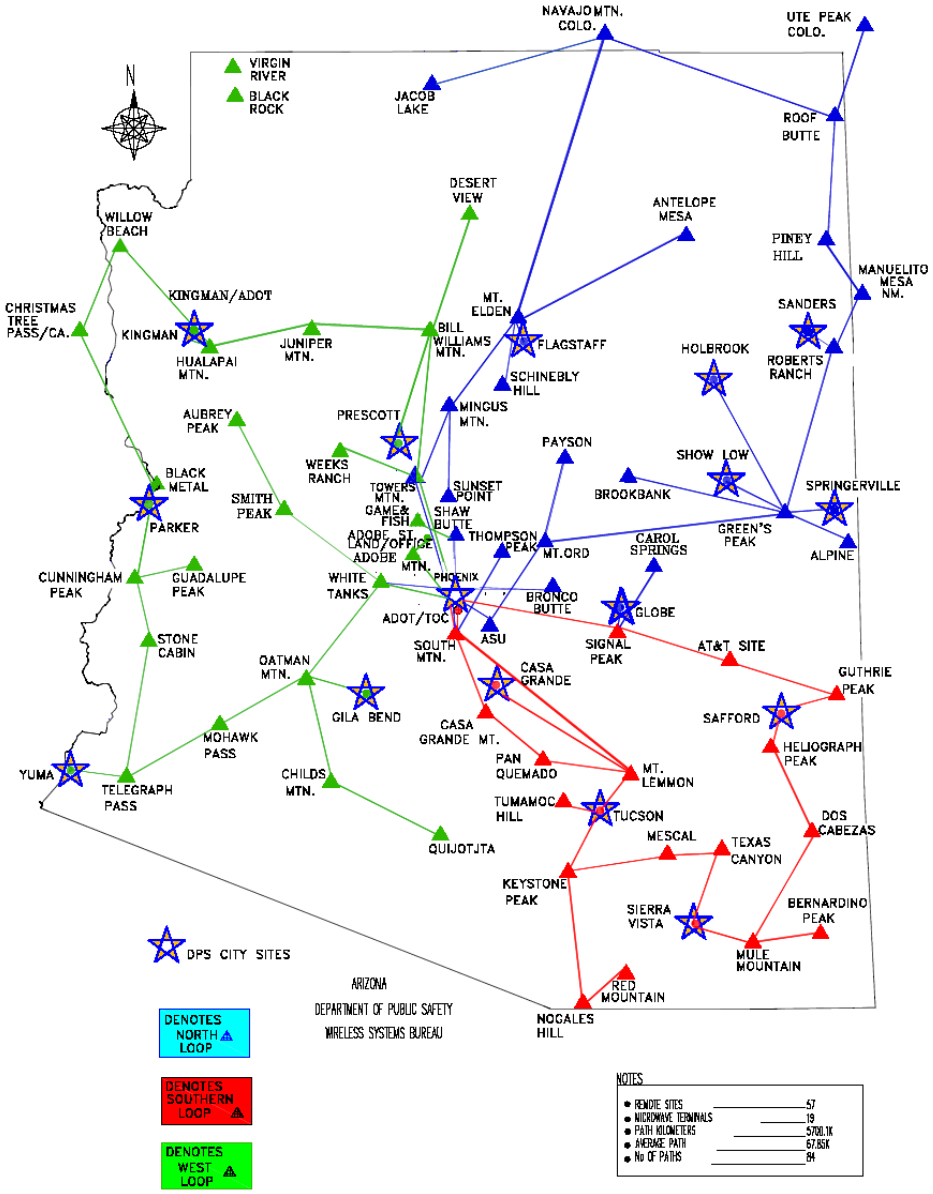

Figure 16 - STATE MICROWAVE MAP[16]

[16] Arizona Department of Public Safety, Wireless Systems Bureau

4.1.7.4. Statewide Land Mobile Radio System

As discussed previously the PSCC has decided to install a statewide radio system to serve all public safety entities. The design calls for a 700 MHz system employing digital technologies compatible with the Association of Public-Safety Communications Officials (APCO) Project-25 standards. The system will reuse the 96 channels available for state and require an estimated 74 radio sites providing mobile coverage throughout the state. Most of the sites are owned by the state, with some added contingency sites. The sites will be interconnected by the state microwave system, which must be upgraded from analog to digital technology for it to have the necessary features and capacity.

The sites will have a number of repeaters based on the amount of radio traffic and number of users expected in the area of the site. To meet expected demand, a minimum of six channels up to a maximum of 18 channels will be installed at each site.

The statewide system will be interconnected with existing or new local 800 MHz Project-25 systems. The Project-25 Inter-Sub-System Interface (ISSI) is currently under development and will be used to permit seamless roaming between the state and local systems.

All subscriber units (mobile and portable radios) will be capable of 700 and 800 MHz operation allowing them to roam among systems.

This system will provide robust interoperability among participating agencies. By using a common infrastructure, each user will be able to communicate with any other user.

Figure 17 illustrates the predicted radio coverage provided by the 700 MHz radio system.

4.1.7.5. Regional System Enhancement

The state encourages local and tribal government agencies to upgrade their radio systems so they are compatible with state systems. All agencies will also be encouraged to participate in the statewide 700 MHz system interoperability component, but the state realizes the 700 MHz system may not meet the needs of all counties and cities. For example, the statewide system, being designed to support the traffic and quantity of users from state agencies for mobile coverage, may not provide enough capacity for local government needs or may not provide adequate indoor portable coverage as required by a city agency.

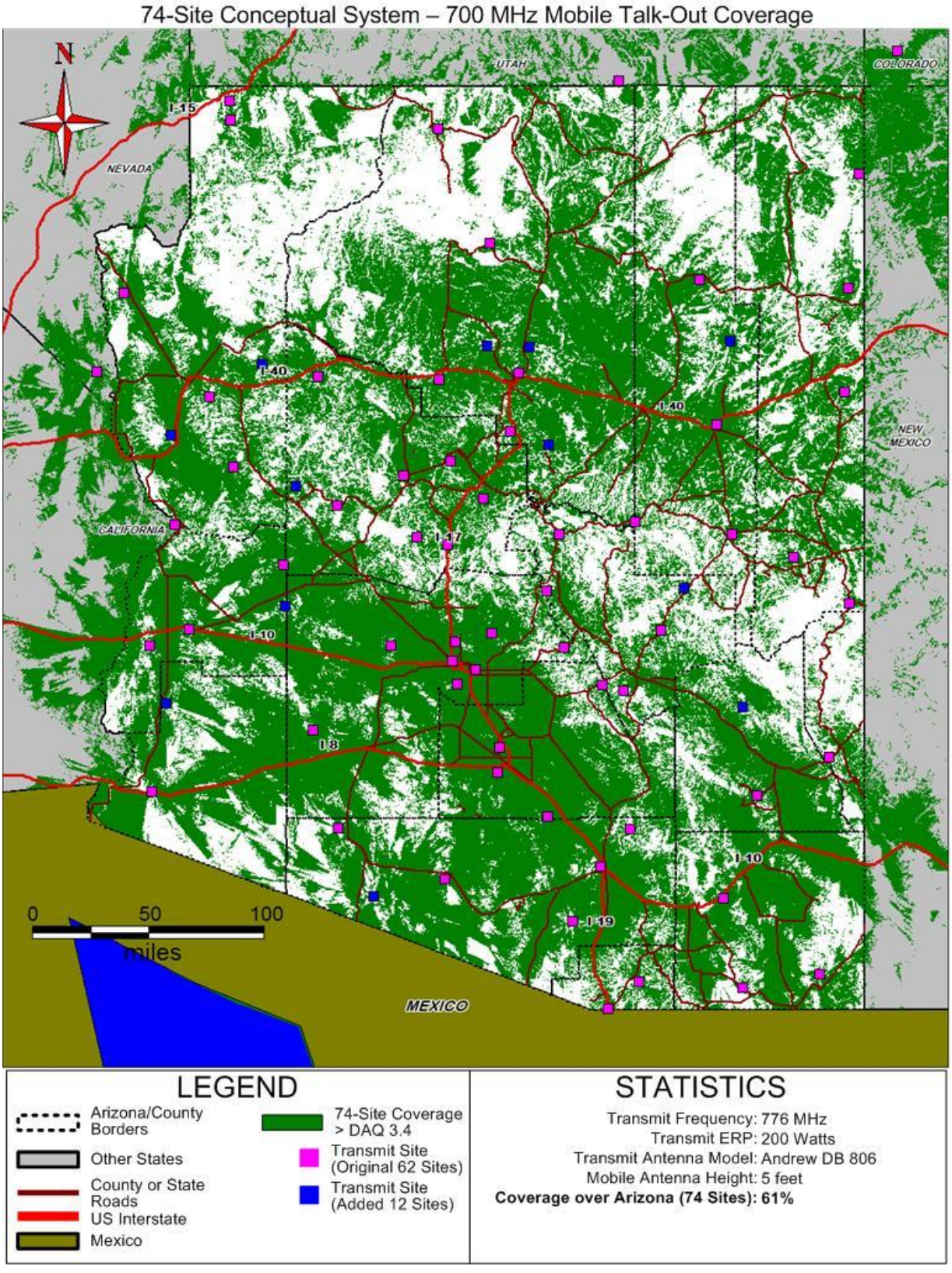

Figure 17 - 74-SITE CONCEPTUAL SYSTEM 700 MHZ TALK-OUT COVERAGE

However, the system's governance will provide methods to enable the local agency to provide additional sites and/or channels where needed to meet their requirements. The local agency will benefit from complete interoperability and statewide mobile roaming.

Some non-state agencies may not desire to move to 700/800 MHz, but rather keep operating on their existing system. The statewide system will be expandable to permit either console patching or permanent interconnection with the local system. It is envisioned that the local agency could use one of its existing channels to interface with a 700 MHz talkgroup, in which 700 MHz system users and local users would meet on this channel/talk-group to communicate. For this to succeed, the local agency must provide local coverage where needed. If a local unit leaves their coverage area, this interconnection will no longer function.

All agencies will continue to be encouraged to equip their personnel with AIRS channels providing further interoperability. At some point in the future, local agencies may also wish to purchase 700 MHz Project-25 mobile or control station radios to allow those mobile users or dispatch centers so equipped to communicate directly with statewide system users.

4.1.7.6. Demonstration Project

The state will demonstrate the interoperable architecture (organizational and system) that has been identified as the baseline design for the expanded statewide system. Methods to expand current systems for greater coverage will show how government entities can work together to form governance agreements. The project will also show how completely separate radio systems can be interconnected to permit continuous radio coverage over large portions of the state. The Demonstration Project will include four components:

- Provide state personnel with radios that will be used on the Phoenix-Mesa metro 800 MHz system, demonstrating the interoperable nature of Project-25 systems and validating forms of inter-governmental agreements.
- Build a 700 MHz site on White Tank Mountains to expand the Phoenix-Mesa 800 MHz system coverage west of the metro area. Governance issues will also be identified as inter-governmental agreements are formed.
- Build a 700 MHz site on Oatman Mountain to expand westward the coverage of the Yuma Regional Communications System (YRCS) 800 MHz network to the east. Governance issues will be identified as inter-governmental agreements are formed.
- The Demonstration Project will then connect the Phoenix and Yuma systems together to validate roaming and intersystem communications, as well as additional governance and system management issues.

4.1.8. 700 MHz Regional Planning

The 700 MHz Regional Planning Committee (RPC) is chaired by the chair of the Arizona Chapter of APCO. The state of Arizona maintains authority and oversight over both the interoperability channels and state-licensed frequencies in this spectrum. The RPC applied for and received authority to coordinate the general use portion of the 700 MHz spectrum in Arizona. The statewide regional plan encompasses the entire state as indicated in Figure 18.

Figure 18 - 700/800 REGIONAL PLANNING COMMITTEES

4.1.9. 800 MHz Regional Planning

As with the 700 MHz RPC, the 800 MHz RPC is also statewide. The Arizona Chapter of APCO is responsible for the planning and coordination of the 800 MHz channels. Arizona is in Wave-4 of the re-banding effort and as such, it has not yet begun in the state. The start date for this effort is determined by treaty negotiations between Mexico and the United States. At this time, the date for this process is unknown.

4.1.10. Channels In Use

Tables 24 and 25 represent the channels that are used either statewide or regionally for interoperability. Unless equipped with additional equipment, those entities operating on UHF, VHF, or 800 MHz typically do not interoperate with others that use different frequencies. Therefore, for example unless DPS had two radios in their vehicles, when they are in the Phoenix area today, without a manual patch at the dispatch center, they cannot interoperate with the Phoenix Police Department.

Existing Interoperability Channels			
Channels	Base Station TX Frequency	Base Station RX Frequency	Statewide/Regional
AIRSAZ	155.475	155.19	Statewide
AIRS1	155.475	155.19	Regional
AIRS2	155.475	155.19	Regional
AIRS3	155.475	155.19	Regional
AIRS4	155.475	155.19	Regional
AIRS5	155.475	155.19	Regional
VAIRS5-D	155.475	155.475	Statewide Direct
AIRSAZ	460.375	465.375	Statewide
AIRS1	460.375	465.375	Regional
AIRS2	460.375	465.375	Regional
AIRS3	460.375	465.375	Regional
AIRS4	460.375	465.375	Regional
AIRS	460.375	465.375	Regional
UAIRS5	460.375	460.375	Statewide Direct
AIRSAZ	866.0125	821.0125	Statewide
AIRS1	866.0125	821.0125	Regional
AIRS2	866.0125	821.0125	Regional
AIRS3	866.0125	821.0125	Regional
AIRS4	866.0125	821.0125	Regional
AIRS5	866.0125	821.0125	Regional
8AIRS5-D	866.0125	866.0125	Statewide Direct
VCALL	155.7525	155.7525	Statewide
VTAC1	151.1375	151.1375	Regional
VTAC2	154.4525	154.4525	Regional
VTAC3	158.7375	158.7375	Regional
VTAC4	159.4725	159.4725	Regional
UCALL	453.2125	458.2125	Statewide
UCALL-D	453.2125	453.2125	Statewide Direct
UTAC1	453.4625	458.4625	Regional
UTAC1-D	453.4625	453.4625	Regional Direct
UTAC2	453.7125	458.7125	Regional
UTAC2-D	453.7125	453.7125	Regional Direct
UTAC3	453.8625	458.8625	Regional
UTAC3-D	453.8625	453.8625	Regional Direct
8TAC1	866.5125	821.5125	Regional

Existing Interoperability Channels (Continued)			
Channels	Base Station TX Frequency	Base Station RX Frequency	Statewide/Regional
8TAC1-D	866.5125	866.5125	Regional Direct
8TAC2	867.0125	822.0125	Regional
8TAC2-D	867.0125	867.0125	Regional Direct
8TAC3	867.5125	822.5125	Regional
8TAC3-D	867.5125	867.5125	Regional Direct
8TAC4	868.0125	823.0125	Regional
8TAC4-D	868.0125	868.0125	Regional Direct
8TAC5	866.0375	821.0375	Regional
8TAC5-D	866.0375	866.0375	Regional Direct
Fire Mutual Aid	154.28	154.28	Statewide
AZ Search & Rescue	155.28	155.28	Statewide

Table 24 - EXISTING STATEWIDE OR REGIONAL INTEROPERABILITY CHANNELS

NPSPAC Repeaters				
Region	Jurisdiction	Agency	TX Frequency	RX Frequency
Central	Phoenix-Mesa Metro	All	866.5125	821.5125
North	Flagstaff	All	866.5125	821.5125
South	Yuma	All	866.5125	821.5125

Table 25 - NPSPAC REPEATERS IN OPERATION AND PROGRAMMED CHANNELS

4.2. GOVERNANCE STRUCTURE

The PSCC was formed to address interoperability issues in the state of Arizona and begin the process of identifying a strategy, proposed solution and funding needed to achieve statewide interoperability. In 2004, Governor Napolitano signed legislation establishing the PSCC. With Commission members appointed by the Governor, the PSCC reflects a broad, multi-disciplinary community of public safety and emergency management agencies from across the state. The PSCC is charged with oversight of the statewide plan for an interoperable radio and data network. Figure 19 is the PSCC's Organizational Chart.

The Commission has always recognized and stressed the importance of shared, joint-use radio systems not only for taking advantage of economies of scale to control costs, but also more importantly for improved interagency communications (interoperability). The PSCC Support Office is working to develop and facilitate the Intergovernmental Agreements (IGAs) necessary to improve interoperability through co-development and sharing of future and existing systems. By expanding upon existing and developing new partnerships and associated IGAs, Arizona plans to leverage and complement existing and future systems, which are closely related to the PSCC's defined path of a 700/800 MHz trunked environment based on the APCO Project-25

standards (also known as the Telecommunications Industry Associations standards series 102). The Commission has also made a strong commitment to interagency communication with existing VHF and UHF systems first through the AIRS network of mutual aid channels but also through high-level network connections.

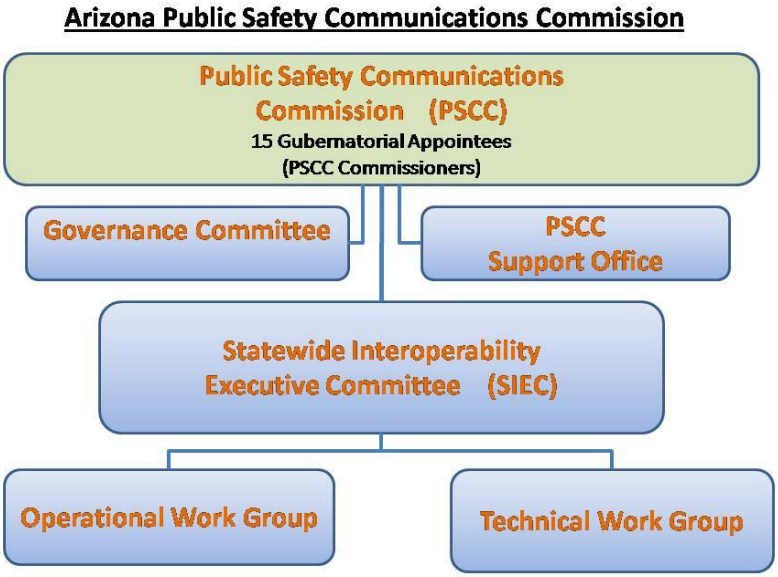

Figure 19 - ORGANIZATIONAL CHART ARIZONA PUBLIC SAFETY COMMUNICATIONS COMMISSION

Arizona's state government is in an ideal position to provide leadership and facilitation to ensure that radio systems are built around a central plan encompassing cooperation and involvement of all levels of government. Education to garner support for this approach is essential and must be presented in a non-technical format for elected officials and members of the public. The PSCC Concept of Operations (*ConOps)* Report was developed and approved by the PSCC in part to fulfill this function. (The *ConOps* Report may be accessed online at:

http://www.azdps.gov/pscc/PSCCFinalConOps102605.pdf)

Funding limitations restrict most agencies' abilities to implement and sustain state-of-the-art radio systems. As part of its oversight, the Arizona PSCC must find a compromise that is palatable to the majority of prospective members. In addition, the PSCC must collaborate with large metropolitan areas (Tucson/Pima County, Phoenix/Mesa), as well as with smaller jurisdictions to strategize how the regional projects in these areas can be incorporated into the statewide plan.

A common theme among the more mature projects is that governance is an evolving process. The current Arizona PSCC provides a good starting place for governance. State government is motivated by the pressing need to replace its aging system. Smaller agencies or those serving rural communities are motivated to participate in developing a new system because they lack the resources to build larger communications networks. The agencies in regional interoperability projects are motivated to achieve interoperability with partner agencies due to operational realities. These same realities create the will to achieve interoperability with

developments at the state level. It is essential that potential partner agencies participate in the development of governance and decision-making processes to ensure a cohesive and united effort will be successful and maintained.

4.2.1. Public Safety Communications Commission (PSCC) Vision

The Vision of the PSCC is to "Enable real-time, interoperable communications between local, county, state, tribal, and federal public safety entities in the state of Arizona to effectively protect lives and property.[17]"

Mission

In order to enable real-time, interoperable communications between local, county, state, tribal, and federal public safety entities in the state of Arizona to protect lives and property, the PSCC will:

- Promote the development and use of standards-based systems
- Capitalize on opportunities to share resources
- Apply best practices and lessons learned
- Provide effective, sustainable, and reliable radio communications between local, county, state, tribal, and federal public safety entities

PSCC History

The Arizona PSCC's history is best summarized on its website and is quoted in this section of the SCIP.

> The Arizona PSCC began as an *ad hoc* committee comprised of dedicated public safety executives who volunteered their time and energy to addressing the short- and long-term interoperable communications needs for all public safety entities in the state of Arizona. The PSCC was formed in April of 2000 to educate its members and community stakeholders on the critical need for interoperability and to begin the process of identifying funding for this long-term enterprise. PSCC membership has shared one central focus: *to develop a standards-based, shared voice and data radio system that efficiently and effectively addresses the front-line needs of its users to protect life and property.*
>
> The PSCC began meeting on a quarterly basis and established subcommittees to assist in identifying funding and educating the public safety community, general public and elected officials. With the assistance of the Arizona Criminal Justice Commission (ACJC), a federal appropriation earmark was acquired to fund a study of public safety communications systems in use throughout Arizona. This study was the critical first step

[17] Public Safety Communications Commission

required before the PSCC could begin developing a conceptual and detailed technical design that would lay in a course for future public safety communication systems in Arizona.

Since September 11, 2001, the national and state focus on homeland security has further emphasized the critical need for radio voice and data technologies to support the public safety "first responders" for the foreseeable future. Current homeland security funding is only a stop-gap measure to improve local interoperability and does not improve upon existing communication infrastructures or inadequate statewide radio coverage.

While all public safety agencies have a need to upgrade communication capabilities to service their specific communities, it became clear that a greater statewide effort was required to address multiple-agency/cross-jurisdictional communications needed during large-scale events and natural disasters affecting the state. This has evolved into a vision for a modern statewide voice- and mobile-data network, which will support local public safety operations as well as providing a robust statewide infrastructure supporting wide-area coverage for all agencies. This is a long-term, complex, and expensive undertaking that requires a high level of accountability, management, and operational control to be successful. Planning and managing a system of this size and complexity requires a competent full-time staff with a single focus on statewide system design and implementation.

DPS engineers and technicians manage today's statewide microwave network and associated state agency radio systems. The state-owned microwave network, which could serve as the statewide infrastructure, is badly in need of modernization, which includes transitioning from analog to digital technology. The four-to-five decade-old technologies and concrete and steel infrastructures of Arizona have survived well beyond their anticipated life cycle and are in desperate need of replacement and modernization. Current DPS staffing and funding are inadequate for the proper planning, development, deployment, and operational management of any future network that becomes a part of the state's public safety infrastructure. Further, this issue affects all public safety entities working within the state.

Now officially organized as the Arizona Public Safety Communications Advisory Commission (continuing to be known as PSCC), the commission will build upon the work already begun. The PSCC staff will foster, recommend and develop technical standards; oversee conceptual and detailed design efforts; and pursue funding to build out and maintain a statewide system for use by all local, state, tribal and federal public safety entities in Arizona. The PSCC will continue to work closely with its partners to achieve a system design that will meet the needs of all parties. There is much more to be done to

reach this goal, and continuing funding to complete designs and construct the system is critical to enable and advance the work already accomplished.[18]

PSCC Membership

The Governor of the state of Arizona appoints 15 members to serve as Commissioners on the PSCC. The terms of these appointments are for 3 years, and the Arizona State Senate must confirm each member, who represents differing disciplines and jurisdictions. Offsetting terms of office ensure a consistent approach in this important role. Currently, the following Commissioners serve on the PSCC along with their associated community of interest:

- Chairman David Felix, Deputy Director, **Arizona Department of Public Safety**
- Ray W. Allen, Assistant Chief, Tucson **Fire Department**
- Marcus Aurelius, **Emergency Management**
- Michael Brashier, Communications Manager, **City of Casa Grande**
- Amy Brooks, Captain, Apache Junction **Fire Department**
- Hal Collett, Sheriff, La Paz County / **Arizona Sheriffs Association**
- Jan Hauk, Arizona **Fire District Association** Representative
- Tracy L. Montgomery, Assistant Chief, Phoenix **Police Department**
- Leesa Berens Morrison, Director, **Arizona Department of Homeland Security**
- Kathleen Robinson, Assistant Chief, Tucson **Police Department**
- Dora Schriro, Director, **Arizona Department of Corrections**
- Danny Sharp, Chief, Oro Valley **Police Department**
- Dan Wills, Battalion Chief, Sedona **Fire District**
- Dewayne Woodie, Fire Chief, Ganado **Fire District**
- Michael Worrell, Captain, Phoenix **Fire Department**

The PSCC was organized in 2000 and has conducted regular meetings since its inception. Meeting intensity has increased in recent years as illustrated by the PSCC meeting calendar below. Generally, the PSCC meets on a quarterly basis, on the 4th Tuesday of the first month of the quarter. That schedule is subject to change, based upon requirements and opportunities. Below is the meeting schedule of the PSCC since its inception.

- **2000** – Organized
- **2001** – October 30; December 06
- **2002** – January 22; March 26; August 27
- **2003** – February 25; March 25; June 24; September 23; December 16
- **2004** – March 23; June 29; October 26

[18] The information on the PSCC was taken from http://www.azdps.gov/pscc/default.asp

- **2005** – January 11; March 22; May 24; July 26; October 26
- **2006** – January 24; April 25; July 11; October 24
- **2007** – January 23; April 24; July 10; August 21; September 25; October 23; November 20, November 28, December 11.

Charter

The PSCC charter was established in Arizona State Law on July 5, 2004. This enabling legislation is codified under Arizona law §41-1830.41 and §41-1830.42**.** The rules under which the PSCC exist and operate are shown in Figure 20.

Interoperability Governance Structure

Arizona has a multi-level program to oversee the governance of interoperable communications. The highest levels of state government recognize the criticality of public safety communications and as such, the Governor and Legislature have legally empowered the PSCC to oversee the state's efforts. To support the PSCC's work, the state has provided staff, managerial and logistical support through the PSCC Support Office and its Executive Director. Reporting to the PSCC is the SIEC and its sub-committees. The Commission and Committee are composed of appointed representatives from all levels of government as well as emergency response providers. As the state is currently planning a complete upgrade of its existing emergency communications networks, these bodies will fill the crucial role of ensuring user participation with government oversight as the governing bodies, SOPs and agreements continue to be identified and formalized. Although the members will change on a regular basis, these bodies do not have expiration dates or "sunshine" clauses.

Day-to Day PSCC Operations

The PSCC Support Office is organizationally located within the Arizona DPS and is responsible for the support of the PSCC, its committees, and all subcommittees. In this capacity, the office is staffed by an Executive Director and staff which consists of an executive assistant, project manager, communications engineer, marketing specialist, and administrative services officer who are responsible to the Commission to develop and promote a standards-based radio system supporting interoperable communications for public safety agencies. The commission staff assists in writing and submission of an annual report to the Governor, the Speaker of the House of Representatives and the President of the Senate.

The PSCC Support Office is also responsible for executing and maintaining the AIRS State Plan, Channel Plans, and MOUs. Completing the MOU allows agencies to participate in the AIRS for mutual aid operations by accessing state-licensed mutual aid frequencies.

§41-1830.41. Arizona public safety communications advisory commission; membership; appointment; terms; meetings:

A. An Arizona public safety communications advisory commission is established in the department of public safety consisting of the director of the department or the director's designee and fourteen other advisory members appointed by the governor pursuant to section 38-211.
B. The governor shall make the appointments so that the existing five emergency response regions in this state are as equally represented on the advisory commission as possible.
C. Members shall serve three year terms.
D. The Arizona public safety communications advisory commission shall meet quarterly or on call of the director who shall serve as chairman.
E. Commission members are eligible for reimbursement of expenses pursuant to title 38, chapter 4, article 2.

§41-1830.42. Advisory commission; department; powers and duties; report:

A. The Arizona public safety communications advisory commission shall make recommendations to the department regarding the development and maintenance of work plans to outline areas of work to be performed and appropriate schedules for at least the following:
   1. The development of a standard based system that provides interoperability of public safety agencies' communications statewide.
   2. The promotion of the development and use of standard based systems.
   3. The identification of priorities and essential tasks determined by the advisory commission.
   4. The development of a timeline for project activities.
   5. Completion of a survey of existing and planned efforts statewide and benchmark against similar efforts nationally.
   6. Providing support for the state interoperability executive committee.
   7. Establishing committees and work groups as necessary.
B. The department may:
   1. Employ personnel as required with available monies.
   2. Enter into contracts to assess, design, construct and use public safety communications systems.
   3. Accept grants, fees and other monies for use by the department and the advisory commission.
   4. Enter into agreements to carry out the purposes of this article.
   5. Request cooperation from any state agency for the purposes of this article.
C. The department of public safety shall consult with the director of the government information technology agency or the director's designee on an ongoing basis and submit a report quarterly to the director and the joint legislative budget committee for review regarding expenditures and progress of the department of public safety, including a review of staff operations and preparation of requests for proposals for system detail and concept work.
D. The commission shall annually submit a report of its activities and recommendations to the governor, the speaker of the house of representatives and the president of the senate on or before December 1 and shall provide a copy of the report to the secretary of state and the director of the Arizona state library, archives and public records.

Figure 20 - PSCC ENABLING LEGISLATION[19]

[19] Arizona Legislature

The MOU is a simple two-page agreement (plus a signatory page) containing the purpose, authority, applicability, and understanding of the agreement. It requires an authorized signature of the User Agency and the PSCC Executive Director. Additionally, it requires the user agency to disclose the number of subscriber units and the channels on which those units will function. (Information about AIRS is available at:

http://www.azdps.gov/pscc/documents/AIRSPolicy.2.2.07.pdf

4.2.2. Statewide Interoperability Executive Committee

The Arizona SIEC was formed by the PSCC and serves as an advisory committee to the PSCC. The Arizona SIEC authorized by the state through the recommendation of the FCC to coordinate the state use of the 700 MHz spectrum. The SIEC has a voting body, a Technical Subcommittee and an Operational Subcommittee whose members are listed below. The SIEC also serves as a technical and working committee that assists the PSCC. The SIEC has a website available for view at: http://www.azdps.gov/pscc/standards.asp. Included on this website are the programming and equipment standards for VHF and UHF equipment as well as other interoperable communications related documentation. The following list identifies SIEC members:

- Co-Chair Paul Wilson, Captain, Pima County Sheriff's Department
- Co-Chair Mark Venuti, Director, Guardian Medical Transport
- Ken Leighton-Boster, Emergency Response Chief, Arizona Department of Health Services
- Scott Tillman, Supervising Telecommunications Engineer, Wireless Systems Bureau, Arizona DPS
- Pete Weaver, Emergency Manager/LEPC Coordinator, Pinal County Public Works
- Technical Working Group Co-Chairs
  - Co-Chair Kevin Rogers, Manager, Wireless Systems Bureau, Arizona DPS
  - Co-Chair Michael Worrell, Captain, Phoenix Fire Department
- Operations Working Group Co-Chairs
  - Co-Chair Michael Brashier, Communications Manager, City of Casa Grande
  - Co-Chair, Karl Hartmetz, Communications Director, La Paz County Sheriff's Department

The SIEC is a highly interactive working group that encourages participation from every aspect of the public safety and first responder community of interest, including state, local, and non-governmental representatives. Through their participation and input, this Arizona SCIP incorporates the needs and concerns of all levels of public safety providers. This will ensure system design success and additionally, as the standard operational guidelines and procedures are created, they will be acceptable and functional to all disciplines of users.

SIEC Meetings

SIEC meetings are generally held in concert with the PSCC meetings, on a quarterly basis, on the second Tuesday of the first month of each quarter. That schedule is subject to change based upon the work and needs of the PSCC and requirements of the committee. Below is the meeting schedule of the SIEC.

- 2005 - July 26, October 26
- 2006 – January 24, April 25, July 11
- 2007 – January 23, July 9-10, September 25, October 23, November 20

As illustrated by the membership of the PSCC and SIEC, the state has included local participation in the foundation of the SCIP's governance. Local entities will continue to be voting members on the governing bodies and participate in the strategy and planning sessions as the new networks are designed and constructed.

Local Government Participation

If it were not for the committed members of the PSCC and SIEC this effort would not be successful. In addition to those who serve in the committee structure, both the PSCC and SIEC hold regular, open, public meetings where all interested parties are invited to attend and participate. For planning purposes and keeping the plan up to date, the PSCC and SIEC solicit the assistance of those who have an interest in working on this process.

PSIC-Funded Equipment Promotes Interoperability

As outlined in Sections 3.1 and 7, the Arizona DHS has required as part of its instructions to local governments that any communications systems purchased with PSIC funds be interoperable with the statewide radio system.

4.3. TECHNOLOGY ASSESSMENT

The current technology in place within the state is mostly conventional (VHF or UHF), serving the more rural areas. The larger metropolitan areas have migrated or are in the process of migrating to 800 MHz trunked systems.

For detailed information about existing systems, please refer to the January 22, 2007 *Current Radio Systems Report*. This report is available through the PSCC Support Office (Mail Drop 3450, PO Box 6638, Phoenix, AZ 85005). The following are the most relevant sections from that report.

> The Arizona PSCC is charged with bringing the radio systems of the state into a modern, easy to use network that provides interoperability among all agencies.
>
> As a starting point, a review of the existing, large regional and statewide radio systems within the state was conducted. This *Current Radio Systems Report* is the first deliverable report of the project. It will serve as a reference document for future tasks in the project.
>
> The report contains three sections. The first section describes the radio systems in operation for and by the state government. This section provides a brief summary of each system, the frequencies used, the general configuration of the infrastructure, an estimate of the number of subscriber units (mobile and portable radios), and how these units are distributed throughout the state. The agencies and systems reviewed are the following:
>
> - Arizona Department of Transportation
> - Arizona Department of Public Safety
> - Arizona Game and Fish Department
> - Arizona Department of Corrections
> - Arizona Department of Juvenile Corrections
> - Arizona State Parks Board and State Land Department
> - Arizona Department of Agriculture
> - Emergency Medical Communications System
> - Veterans Memorial Coliseum
> - Shared Arizona Government Operations
> - AIRS
>
> These state systems operate mostly in the VHF radio band, with some at UHF and 800 MHz. There are over 17,000 subscriber units within the state agencies.

The next section of the report describes eight major systems in service in the state that are used by several municipal agencies and private sector firms. These descriptions resulted from a series of meetings where representatives from these organizations met with Federal Engineering and the PSCC staff to discuss the systems. The systems included in this section are as follows:

- City of Glendale
- Phoenix-Mesa Regional System
- Pima County Integrated Wireless Network
- Central Arizona Project
- Salt River Project
- Arizona Public Service
- Northern Arizona University and the City of Flagstaff
- Maricopa County
- Yuma also operates an 800 MHz system

All of these major systems operate in the 800-900 MHz band and use various forms of trunking technology. Most of these systems are not directly compatible with the others. These agencies have 35,000 radio units.

The last major section of the report provides a tabular listing of all radio system agencies in the state, indicating which frequency bands are in use. This section reports on County Sheriffs, Cities, Fire Districts, and Tribal agencies and was tabulated in previous reports.

PSCC's second report, the February 19, 2007 *Radio System Needs Assessment Report,* reviews problems, needs, and requirements found in previous studies and reports. The following excerpt from that report grouped the needs into four categories (listed below, Functional, Technical, Governance, and Standards):

Functional

The system or its components must operate or perform generally as described:

- interoperability
- voice encryption
- dispatch centers
- maintenance
- operations
- subscriber unit tiers
- features
- compatibility

Technical

These engineering goals must be fulfilled by the system, such as:

- coverage
- capacity
- reliability
- quality of service
- mobile data
- interference levels

Governance:

The system is managed through some form of governance, which includes policies and procedures.

- dispatch center autonomy and capabilities
- system operating authority
- funding
- ongoing system management

Standards

The industry recognizes these as a general goal to be met. Examples are APCO Project 16 and Project-25.

The reports identified the Project-25 digital radio standard as a requirement to be compatible with future federal and local systems that are meeting Project-25 specifications.

Other industry standards were also identified with which the future system should be compatible.

The needs and requirements can be summarized by the following list:

- Statewide coverage based on risk assessment
- Minimal interference potential
- Cost
- Sustainable investment strategy
- Channel Availability
- Complexity of use
- Encryption
- Interoperability within state agencies

- Interoperability with Metro agencies
- Interoperability with other agencies

State Agencies:

There are 11 state-operated radio systems. Table 26 summarizes the frequency bands used by the state government agencies, and Table 27 shows the total quantity of portable and mobile radios used on the state-operated radio systems.

Migration

A path from existing technology to newly procured technologies is described in depth in Section 6 of this document. As indicated in Table 16-20, the widespread use of all frequency bands and technologies by public safety officials clearly illustrates how difficult it is to establish interoperable communications using the radio systems in place today. That stated, through years of working together, agencies have created ways to communicate today that will change in the next few years. Today, interoperability takes place via AIRS, gateways, or console patching. As the state migrates to a statewide radio system, where interoperable communications will be inherent, there will be a disruption in the current way they do business. It is for this reason that a migration path will be established to assist state, local, tribal,NGOs and federal entities interoperable during the transition from the short-term to the long-term solution. The dates, the technology, and duration of this migration path are determined by the transition dates to the statewide interoperability system. In many cases, the migration path will be a simple change of frequencies while the system is updated, yet in other locations, AIRS will be the system of choice until the statewide system is in place. The migration path includes eventual migration to the 700 MHz standards-based radio system component of the state's interoperability solution, which in turn includes completing a governance model by 2008, a Demonstration Project scheduled for 2008, and the ability for local government to migrate in place using regional connections. These connections could be either by standards-based technologies complementary to the state system or by regional connectivity. To enable this technology, an enhanced digital microwave network will be completed and additional infrastructure components will be built. State-of-the-art communications centers will be constructed to support the new dispatching functionalities enabled through trunking features and respective fleet mapping shall be performed for subscriber unit programming. Naturally, the individual radio devices need programming and installation in both mobile and fixed locations.

Use of Existing Equipment with Newer Technology

The technology the state is replacing has already outlived its anticipated useful life cycle. Manufacturers are no longer supporting the technology and spare/repair parts are available on a limited basis at best. However, for those entities that will choose not to join the statewide radio system, it is important that they have the ability to interoperate with the state. It is for this reason the technology deployed will be "platform neutral." It remains important to note that, regardless if a local or tribal government joins the statewide radio system or not, most of

them will be affected by the FCC mandate to narrowband by 2013. This requirement will force non-joining entities to upgrade their radio systems within the next few years independently.

The process to ensure that purchases comply with the statewide plan is described in Sections 3.1 and 7 (Funding) of this document.

State Agency Frequency Bands					
AGENCY	**VHF CONV**	**UHF CONV**	**800 CONV**	**800 TRUNK**	**800 P-25**
Department of Transportation	X			X	
Department of Public Safety		X			
Game & Fish Department	X				
Department of Corrections	X				
Dept. of Juvenile Corrections	X				
Parks Board & State Land Dept.	X				
Department of Agriculture	X				
EMSCOM		X			
Veterans Memorial Coliseum		X			
Shared Government Operations		X			
AZ Interagency Radio System	X	X	X		

Table 26 - STATE AGENCY FREQUENCY BAND USE

State Agency Radio Equipment Inventory						
	Homeland Security Regions					Total
Equipment type	North	South	East	West	Central	Quantity
DPS mobile and portable radios UHF	350	550	340	310	1350	2900
ADOT Mobile and portable VHF 800 MHz	600	600	600	600	800 800	800 3200
DOC mobile and portable radios	580	2457	2648	0	2317	8002
Game and Fish mobile and portable radios	515	146	12	63	294	1030
Parks mobile and portable radios	12	18	12	16	2	60
State Lands mobile and portable radios	44	69	11	13	285	422
Agriculture mobile and portable radios	8	4	3	2	11	28
EMSCOM mobile and portable radios	210	340	300	250	100	1200
Operational base and repeater station	29	21	17	25	10	102
TOTAL MOBILE AND PORTABLE RADIOS	2348	4205	3943	1279	5969	17744

Table 27 - STATE AGENCY RADIO EQUIPMENT INVENTORY

Major Radio Systems

There are 12 major radio systems serving non-state entities. These major radio systems have over 40,799 total subscriber units, including 3300 VHF, 400 UHF, 1,500 in 900 MHz, and 3,5569 in 800 MHz, distributed (see Table 28).

Summary Of Major Radio Systems					
Major System Name	**System Type & Features**	**Frequency Band**	**Channel Quantity**	**Radio Site Quantity**	**Subscriber Unit Quantity**
Glendale	P25, simulcast, trunked	800	10	2	2000
Phoenix	P25, simulcast, trunked	800	112		11,000
Mesa	P25, simulcast, trunked	800	16	9	3500
Pima County [20]	P25, simulcast, trunked (future)	800	130	26	6988
Central AZ Project	TDMA, trunked	800	8	15	475
Salt River Project	Trunked	900	25	5	1500
Salt River Project	Conventional	VHF			400
Salt River Project	Conventional	UHF			400
AZ Public Service	Trunked	800	39	32	3349
NAU/Flagstaff	Trunked	800	8	2	757
Maricopa County	Trunked	800		15	6000
Yuma Regional Communications System[21]	P25, Trunked	800	20/45	4/8	1500
Prescott Regional Communications Center	Conventional	VHF	20	8	1500
Sedona Fire Regional Communications Center	Conventional	VHF	17	12	1430
Phoenix Fire Regional Dispatch	Conventional	VHF	14	62	1100

Table 28 - SUMMARY OF MAJOR RADIO SYSTEMS

All systems above are compatible with AIRS (as they all are equipped with cross-band repeaters programmed with the interoperability channels for UHF, VHF, and 800 MHz.

All Other Radio Systems

The radio systems serving entities other than reported above are summarized in the tables in Section 4.1.3 of this plan.

[20] The Pima County System referred to in Table 28 is a planned system.

[21] Yuma reported that their system is being built. Currently they have 20 of the 45 repeaters online and they have four of the eight radio sites operational.

Summary of All Radio Systems

The frequency band and quantity of radios used in all of the radio systems serving entities in Arizona are shown in Table 20 of this SCIP.

The results of the current systems study show there are a majority of systems currently using VHF radio systems in Arizona, however, the larger systems in the state are typically use 800 MHz systems. Much of the radio equipment used in the state is aging, and faces increasing difficulties with reliability. As this equipment gets older, it will also have increased maintenance costs, as well as not being able to address the upcoming federal narrowband mandates for 2013.

The 20 systems in the 800 MHz band serve approximately 35,000 units. A count of the conventional units was not performed during the study, but the state system units alone total about 16,500. There are another 17,000 conventional units on the VHF and UHF bands used by sheriffs, police, fire, and other public safety agencies.

It is important to note that all of the radios below 512 MHz (non-800 MHz radios) including portables, mobiles, and base stations must be narrowband by 2013, which means many existing radios must be replaced with narrowband-capable units. Radios purchased recently may have narrowband capabilities, meeting FCC rules. Agencies wishing to continue using their existing systems that currently operate in narrowband may choose not to join the 700 MHz system. The AIRS network will continue to serve these agencies. Further, their systems could interface to the 700 MHz system for improved interoperable communications.

Those agencies not joining the 700 MHz system can join at any time in the future. Regardless, AIRS will be maintained as long as existing system users and/or entities coming from other areas exist to permit interoperability among all public safety agencies. Existing systems may also be connected to the statewide system through high-level network interfaces.

There will always be a need to look ahead to acquire new technology. This is true for both the existing narrowband system and the 700 MHz system users. The governance board and PSCC must establish and continuously review migration routes to allow users to upgrade to new technology. For example, although the 700 MHz system is planned to use 12.5 kHz digital bandwidth in 2013, it is known that 6.25 kHz bandwidth will be required in 2017, and engineering details are currently being explored to permit this technological change.

Even if new technology is not warranted for the foreseeable future, replacement strategy and funding must be planned by the governing board to replace portables, mobiles, base stations, controllers, and all system components as they reach the end of their useful life.

Even today, agencies are encouraged to purchase radio equipment meeting the standards established by the SIEC regarding interoperability.

While conducting this survey it was noted that the state desired to use the Communication Assets Survey and Mapping (CASM) System to better inventory its equipment. Additionally, the two UASIs in Arizona use CASM to determine their level of interoperability and their

inventories. As the state looks towards deploying their interoperable solution, it will be important to create an interoperability and inventory tool. It is possible that the state will ask other jurisdictions to support this effort by using CASM as well. CASM is a tool owned by SPAWAR and there are issues regarding the licensing and costs to use the software that will need to be addressed if the state chooses to use this tool.

4.3.1. Standard Operating Procedures (SOPs)

Arizona Revised Statutes Title 26 gives each jurisdiction the ability to create an EOC. As these centers matured, the need for SOPs, and multiple MOUs developed at the local, regional, and state level. Today, each county has an MOU including a series of SOPs on file between their EOC and the state, with agreements with all levels of government and non-governmental organizations. Additionally, each county has a series of MOUs and SOPs that enable their continuity of government services with others. Because of the years of development in this process, the levels of SOPs in Arizona is excellent, all are current and provide required services and communications when they are needed. This section outlines SOPs and MOUs.

Recognizing that SOPs are the written instructions that organizations and individuals must follow to ensure standardization of activities and or procedures, such as accessing interoperability channels, the PSCC has created a Governance Committee to ensure all aspects of governance are successful and representative of all user levels and disciplines. This committee is responsible for creating SOPs, MOUs and other agreements related to overseeing interoperable communications systems. The SOPs in this plan were created to capture the thoughts, plans, and procedures related to public safety communications in the state of Arizona. As the interoperability functions and features of the present AIRS and future 700 MHz radio network will be accessible to state responders, federal responders and emergency service providers from all levels of Arizona, other states, and the federal government, it is imperative that the procedures and terminology follow the nationally-recognized NIMS program. In addition to complying with NIMS, the very concepts of promoting interoperability on a statewide level, ensuring recognized incident management practices and working toward improved domestic preparedness are the goals of the National Response Framework[22] (NRF) that superseded the **National Response Plan** (NRP). Arizona is enhancing its incident planning and response by enabling communications among the local, state, and federal government's emergency responders as well as non-governmental organizations, all towards the national goal of improving protection for our citizens and emergency responders.

[22] The National Response Plan can be viewed at: https://www.llis.dhs.gov/displayContent?contentID=26677

For the purposes of illustration, the following is a model of how SOPs and MOUs are created in Arizona, and how the AIRS SOP might be modified if required:

- PSCC asks the SIEC to develop an MOU for the operations of AIRS
- SIEC refers this to a committee that would draft a MOU
- The MOU would be vetted at an SIEC meeting – the MOU would be published ahead of time to allow review and familiarization
- The MOU would be discussed at an open meeting
- The MOU would be modified if required, or passed on to the PSCC
- The PSCC would schedule the MOU for their next meeting
- The meeting would be publicly announced, and the MOU published
- The public meeting to discuss MOU is held
- The MOU is modified and/or passed
- The MOU is distributed

Table 29 outlines the SOPs used in Arizona. As the state and all of its counties and cities are NIMS-compliant, all SOPs are also compliant with NIMS. SOPs that sent to the state are housed at DEMA. SOPs between two local jurisdictions are located at each of those entities. Examples of SOPs administered by county governments listed in Tables 29, 30 and 31 of this SCIP.

Standard Operating Procedures					
SOP Name	**Agencies Included**	**Disciplines Included**	**SOP Location[23]**	**NIMS-compliant**	**Frequency of Use**
AIRS	Authorized Public Service Providers	Fire, EMS, Law Enforcement, Government,	http://www.azdps.gov/pscc/standards.asp This SOP gives guidance for use of state interoperability channels.	Yes	Daily
Radio Programming Guide	Authorized Public Safety Providers	Fire, EMS, Law Enforcement, Government	http://www.azdps.gov/pscc/standards.asp This SOP identifies specific channels and frequencies for accessing the state interoperability network.	Yes	Daily
Arizona Fire Mutual Aid Plan	All Fire Service	Fire Service	http://azchiefs.publicaware.com/Assets/dept_1/PM/pdf/Mutual_Aid_Plan.pdf This document provides the procedures by which mutual aid is requested and coordinated for all fires in Arizona.	Yes	Daily
Arizona Field Operations Guide (AFOG)	All Fire Service	Fire Service	http://azchiefs.publicaware.com/Assets/dept_1/PM/pdf/Field_Ops_Guide.pdf This document provides detailed guidelines and procedures for command staff and firefighters operating in Arizona. A field guide clearly identifies responsibilities, resources, communication details, and other fire-related resources.	Yes	Daily
Local Communication Center SOPs	All public service providers	Fire, EMS, Law Enforcement, Government,	Found at Communications Centers Communications Centers have dedicated SOPs guiding communications officers, call-takers and dispatchers, as well as first responders and government entities in procedures and protocols specific to that center.	Yes	Daily
Fire Mobilization Guide	All fire agencies	Fire, EMS	http://azchiefs.publicaware.com/Assets/dept_1/PM/pdf/Mobolization_Guide.pdf Outlines procedures required for fire mobilizations.	Yes	Daily

Table 29 - STANDARD OPERATING PROCEDURES

[23] This indicates where the SOP may be viewed and made available to the state emergency response community of interest. This could be a website, or manual, etc.

AIRS

Description: The PSCC and DPS recognized a lack of interoperability among the existing public safety radio networks in the state. To address this problem, they deployed AIRS to provide responders with basic interoperability until a permanent solution is developed. While AIRS provides basic interoperability by patching together disparate frequency bands on a single talk group, it is recognized this is a very limited capability and interoperability that is more comprehensive with greater functionality is a priority for the future.

SOP: In addition to a technology refresh for AIRS, the Arizona SIEC addressed the basic operational aspects of the AIRS network with operational policies and procedures by publishing an initial set of user-based standards that will ultimately lead to the development and implementation of statewide operational standards. The Arizona SIEC has also established a standardized nomenclature for the AIRS network mutual aid channels and related, non-networked, national, and regional mutual aid channels. All of this information is unrestricted and publicly available on the Arizona DPS website:

http://www.azdps.gov/pscc/documents/AIRSPolicy.2.2.07.pdf

The AIRS guidelines include detailed explanations of AIRS' purpose, the governing entity, and eligible users. Amongst the users of the AIRS SOP are the Navajo Nation, the Federal Bureau of Investigation, the National Park Service, private ambulance services, city, and county governments. Additionally, there are definitions and clear operational guidelines governing channel use and priority levels. The guidelines go into further detail, identifying the responsibilities of both the Communications Center and those of the Command and Control in support of and compliance with NIMS and ICS. Finally, the document defines Field User responsibilities and system failure contingencies.

Subscriber Programming Guide

Description: *The Subscriber Programming Guide – Arizona Mutual Aid and Interoperability Channels* is a concise one-page document listing the frequencies and channels to be used for interoperability across the state.

SOP: The guide uses common naming structures to ensure clear identification regardless of user agency or discipline. It also identifies bandwidth, transmit, and receive frequencies and it coordinates the VHF, UHF and 800 MHz bands for the state interoperability network. It is available publicly through the SIEC website. Users of the programming guide include, state, local, tribal and non-governmental entities.

Arizona Fire Mutual Aid Plan

Description: This document is fully NIMS-compliant and used for multi-hazard response planning. The plan provides coordination and a systematic approach for all fire and rescue service agencies to use during management of incidents beyond the agency's original capabilities. Additionally, the plan provides equipment inventories and promotes training and exercise between emergency service providers. The plan is an extension of the Arizona State Response and Recovery Plan and authored considering the needs of local, county, tribal, and state responders. Users of the Arizona Fire Mutual Aid Plan include state, local, tribal, and non-governmental entities.

SOP: The document includes twelve sections and takes a comprehensive approach toward coordinating fire service responses. There is clear guidance on which procedures are to be used and when. The document includes sections for review and updating, and integrates several other guides, such as the State of Arizona Fire Chiefs' *Mutual Aid Plan.* The document is available at: http://azchiefs.publicaware.com/Assets/dept_1/PM/pdf/Mutual_Aid_Plan.pdf

Arizona Field Operations Guide

Description: The Arizona Field Operations Guide is a comprehensive field manual for the fire service. The guide includes sixteen chapters with three appendices. Commanders' Responsibilities, Mutual Aid Requests and Deliveries, Urban Search and Rescue, and Safety and Accountability are among the many fire-related programs and procedures explained in detail. Additionally, the document covers several related NIMS/ICS sections such as Command, Logistics, Operations, Planning, and Finance. Appendix D of that document provides excellent explanations and guidance as to the channels, frequencies, and procedures for operating in Arizona. It defines tower/repeater locations and operational details as well as use of National and State Tactical and Calling channels. In addition, it includes maps identifying the channels to be used based on user location. This guide is available at:
http://azchiefs.publicaware.com/Assets/dept_1/PM/pdf/Field_Ops_Guide.pdf

Local Communications Center SOPs

Description: Independent Communications Centers have dedicated SOPs and policies giving guidance to employees and center users.

SOPs: These guides will contain procedures for all aspects of the center's operations including but not limited to answering phones, paging for emergency and non-emergency calls, equipment operation including interoperability gateways and electronic patching, and selecting repeater locations for coverage control. In addition to specific equipment procedures, the documents should contain protocols for dispute resolution, archiving and historical recall, and employee-related rules, such as ethical conduct. SOPs of this nature are reviewed regularly with employees and users and are enforced by the Communications Center Supervisors, Directors, and Field Coordinators. They are distributed to all employees and user agency commanders and generally are not available to the public.

Arizona SIEC VHF Minimum Equipment Standards

Description: The SIEC has adopted nationally recognized feature sets for VHF equipment that promotes interoperability.

SOP: This document is one page in length and details minimum channel capacity, channel display, frequency range, narrowband capability and P-25 capability. It is available on the SIEC website at: http://www.azdps.gov/pscc/documents/vhfminimumequipstandards.pdf

Arizona SIEC UHF Minimum Equipment Standards

Description: The SIEC has adopted nationally recognized feature sets for UHF equipment that promote interoperability.

SOP: This document is one page in length and details minimum channel capacity, channel display, frequency range, narrowband capability, and P-25 capability. It is available on the SIEC website at: http://www.azdps.gov/pscc/documents/uhfminimumequipstandards.pdf

Arizona Fire Mobilization Procedures

Description: This document outlines the coordination procedures for mobilizing fire resources across the state.

SOP: This document defines mobilizations requirement and expectations for such actions, including mutual aid requirements. The document is available online at: http://azchiefs.publicaware.com/Assets/dept_1/PM/pdf/Mobolization_Guide.pdf

4.3.1.1. Existing Interoperable Communications SOPs

Most SOPs in the state are between local entities (and are inclusive of authorized non-governmental agencies, federal entities, and tribal nations); therefore, the state would not have a copy of these documents. With regard to State SOPs, they are inclusive of state agencies, local authorities, federal agencies, non-governmental organizations, and tribal nations. Below are a series of statewide SOPs and specific information about each. In all cases, SOPs are NIMS-compliant pursuant to both the Governor's Executive Order and by local governments' ordinances or directives.

A request was made of the county EOC directors, managers, and coordinators to share a listing of NIMS-compliant SOPs that include interoperable communications components with the PSCC for the purposes of this SCIP. Table 30 gives the responses received. (Responses came from nine of 15 counties, representing over 90 percent of the population of the state.)

County Emergency Management SOPs					
County	**SOP Name**	**Agencies Included**	**Disciplines Included**	**SOP Location**	**Frequency of Use**
Cochise	CMA	All public agencies in county	Law enforcement, fire, EMS	Cochise County Sheriff's Department	Daily
Coconino	Coconino County EOP	All	Law enforcement, fire, public works, government	Coconino EOC, City of Flagstaff website	Weekly
	Ponderosa Fire Advisory Council	Highlands Fire Department, U.S.F.S – Coconino, NF, National Park Service – Flagstaff area parks, NAU/ERI, Ponderosa Fire District, Pinewood, Mormon Lake, Sedona, Sherwood Fire, Summit Fire District	Wildland fire Coconino County Sheriff's Office, Emergency Management	All agencies regulated by this SOP	Throughout the wildland fire season
Maricopa	Maricopa County Emergency Operations Plan	All Maricopa County and outside agencies represented in county EOC	Law enforcement, public works, public health, mass care, emergency management, fire	Maricopa County Department of Emergency Management	Upon activation of EOC for incidents and exercises
	Maricopa/Pinal County Emergency Alert System Plan	Sheriff's Departments, and Emergency Management Departments of Maricopa and Pinal County, National Weather Service, Local radio and television broadcasters	Emergency management, law enforcement, broadcast communications	Maricopa County Department of Emergency Management	Infrequent – except for National Weather Service storm/flood warnings
	Phoenix Urban Area Security Initiative Strategic Plan	All city, and town police, fire departments, emergency management offices, county public health	Fire, law enforcement, emergency management, public health	Maricopa County Department of Emergency Management City of Phoenix Emergency Management Department	Terrorism/WMD exercises or actual events
Mohave	Mohave County Hazardous Material Plan	Fire district, law enforcement (police and sheriff)	Fire, law enforcement, public safety	Mohave County Emergency Management Office	Annually
	Huamapai Mountain Fire Plan	Fire districts, sheriff's office, state lands, BLM	Fire	Mohave County Fire Officers Association	Annually
	EAS Plan	Public safety	Fire, law enforcement	Mohave County Emergency Management Office	Annually

County Emergency Management SOPs (Continued)					
County	**SOP Name**	**Agencies Included**	**Disciplines Included**	**SOP Location**	**Frequency of Use**
Mohave (Continued)	Diamond Bar Road Plan	Sheriff, Grapevine Mesa Fire Department	Fire, Emergency Medical, law enforcement, tribal	Mohave County Emergency Management Office	-Draft-
Pima	DPS Ranger Communication Plan	Sheriff and DPS Ranger	Law enforcement	Pima County Sheriff's Department	Regularly
Pinal	Pinal County Emergency Response and Recovery Plan	Pinal County agencies – all	All disciplines – fire, law enforcement, HazMat, health and human services, public health, public works, etc.	Arizona Department of Emergency Management (DEMA), Pinal County Emergency Management Office, All counties within Arizona (EMAC)	As needed during the year
	Pinal County All-Hazard Mitigation Plan	All agencies within Pinal County	All disciplines	FEMA, DEMA, Pinal County Emergency Management Office	As needed for all-hazard mitigation
	City/Town Emergency Response and Recovery Plans (Emergency Operations Plans)	Cities of Apache Junction, Casa Grande, Coolidge, Eloy, Maricopa, Towns Florence, Kearny, Mammoth, Superior	All disciplines – fire, law enforcement, HazMat, health and human services, public health, public works, etc.	Pinal County and each jurisdiction within Pinal County	As needed throughout the year
Santa Cruz	Series of bi-lateral plans (not written) between county and Sonora, Nogales, Mexico	Santa Cruz County and the state of Sonora, Mexico	EOC, Fire, law enforcement, includes communications	Information agreement	As needed throughout the year
	County Mutual Aid	All county agencies	Law enforcement, fire, public works	Santa Cruz County Emergency Management	10-15 times a year
	Nogales Bi-National Plan	Nogales, Arizona and Nogales, Sonora, Mexico	Fire, public works	Santa Cruz County Emergency Management	2-5 times annually

County Emergency Management SOPs (Continued)					
County	**SOP Name**	**Agencies Included**	**Disciplines Included**	**SOP Location**	**Frequency of Use**
Yavapai	Yavapai County Disaster Response Plan	All county communities inclusive of those that are non-incorporated	Law enforcement, fire, emergency medical services, public health, public works, Voluntary Organizations Active in Disaster (VOAD) agencies, ARES/RACES, animal disaster services, higher government	Yavapai County Emergency Management Department, DEMA	Semi-monthly
	Disaster Response Plans	All (incorporated) cities and towns in the county	Law enforcement, fire, emergency medical services, public health, public works, VOAD agencies, ARES/RACES, animal disaster services, higher government	City and town halls, fire stations, police	Monthly
	Disaster Response Plans-Tribal	Yavapai Prescott Tribe, Yavapai Apache Tribe	Law enforcement, fire, emergency medical services, public health, public works, volunteers	Tribal headquarters	Quarterly
	State Fire Mutual Aid Agreement	All fire agencies and emergency management agencies in the state of Arizona	Fire, and emergency management	Yavapai County Emergency Management Department	Monthly

Table 30 - COUNTY EMERGENCY MANAGEMENT STANDARD OPERATING PROCEDURES

4.3.1.2. SOP Documentation

The SOPs for AIRS are published on the SIEC website (and are available in Appendix A of this document). They are also available by contacting the PSCC Support Office.

Other SOPs governing how counties deploy their assets during times of emergency are sent to the Arizona DEMA. DEMA then audits the County SOPs, which are cataloged and verified for NIMS compliance. Once the SOP is deemed NIMS-Compliant, the county receives a letter advising that the SOP has been received and that the county complies with NIMS and Arizona requirements.

4.3.1.3. SOP/MOUs Jurisdictions

The State-sponsored SOPs related to using the "Interoperability"-identified channels cover all jurisdictions providing public safety services in Arizona that wish to access those channels.

SOPs governing local government/state government EOC use and procedures are updated and sent to the State as required. Each county is required to submit an Emergency Operations Plan to the Arizona Division of Emergency Management (DEMA). These plans include how counties will interact with cities within their jurisdictions via a series of SOPs, MOUs, after-action reports, and processes to ensure emergencies are handled affectively and expeditiously without need for concerned about agreements, contracts, or understandings. Each plan is exercised and updated regularly. Emergency Operations Plans include all agencies that will or could be used by the county in times of emergency or restoration. This includes city, county, state, federal, and non-governmental organizations. Additionally, there are provisions for elevating emergency operations to DEMA. Each plan is multi-disciplinary and includes fire, law enforcement, public works, emergency medical, communications, transportation, humane/animal welfare officials, non-governmental organizations that assist in emergencies, some of which may include search and rescue, mass care, the Red Cross, or the Salvation Army, etc. Any county submitting an SOP is expected to comply with that policy. Table 32 outlines County/State SOPs and the agencies to which they pertain.

SOP and Agencies				
County/State SOPs SOP Name	**Agencies included**	**Disciplines included**	**SOP location (Where SOP can be viewed)**	**Frequency of use**
Apache County Emergency Operation Plans and Procedures	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Apache County Emergency Operations, or the County Board of Supervisors, DEMA	Used as needed, exercised by county
Cochise County Emergency Operations Procedures Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Cochise County Emergency Operations Centers, DEMA	Used as needed, exercised by county
Coconino County Emergency Response and Recovery Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Coconino County EOC, or County Board of Supervisors, DEMA	Used as needed, exercised by county
Gila County Emergency Operations Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Gila County EOC, or County Board of Supervisors, DEMA	Used as needed, exercised by county
Graham County Emergency Operation Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Graham County EOC, or County Board of Supervisors, DEMA	Used as needed, exercised by county
Greenlee County Emergency Response Plan	All agencies in county that is responsible for the restoration of vital services. This may include NGOs, and state agencies	All hazard plan and is inclusive of all disciplines	Greenlee County, or County Board of Supervisors, DEMA	Used as needed, exercised by county
La Paz County Emergency Response and Recovery Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	La Paz EOC, or La Paz Sheriff's Department, DEMA	Used as needed, exercised by county
Maricopa County Emergency Response and Recovery Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Maricopa County EOC, or County Board of Supervisors, DEMA	Exercised by county, used as needed, and part of UASI planning

SOP and Agencies (Continued)				
County/State SOPs SOP Name	**Agencies included**	**Disciplines included**	**SOP location (Where SOP can be viewed)**	**Frequency of use**
Mohave County Emergency Response and Recovery Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Mohave County EOC, or County Board of Supervisors, DEMA	Used as needed, exercised by county
Navajo County Emergency Response and Recovery Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Navajo County EOC, DEMA	Used as needed, exercised by county
Pima County Emergency Operations Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Pima County EOC, or County Department of Health, DEMA	Used as needed, exercised by county
Pinal County Emergency Response and Recovery Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Pinal County EOC, or County Board of Supervisors, DEMA	Used as needed, exercised by county
Santa Cruz County Emergency Response and Recovery Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Emergency Management Department, Santa Cruz County, DEMA	Used as needed, exercised by county
Yavapai County Emergency Response and Recovery Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Yavapai County Department of Emergency Management, City of Flagstaff, DEMA	Used as needed, exercised by county
Yuma County Emergency Response and Recovery Plan	All agencies in county, includes NGOs, state agencies, and other non-county agencies that may be used for emergency services or restoration	Includes all disciplines that could be used by county to respond to an all hazard emergency and restoration	Emergency Operations Center, Yuma County, DEMA	Used as needed, exercised by county

Table 31 - SOPS AND AGENCIES

4.3.1.4. Bi-National Agreements

In addition to countywide, inter-county, and county/state MOUs and SOPs, Arizona also has a series of bi-national agreements with Mexico. (One of these MOUs can be obtained by

contacting the EOC in Santa Cruz, Arizona.) This MOU provides that each state can provide assistance to the other in times of emergency or disaster. Additionally, it provides for training and exercises. The La Paz Agreement between the United States and Mexico laid the groundwork for mutual aid agreements across the4r international border. This agreement was designed primarily for environmental concerns, but it has been used to the advantage of both countries to foster additional dialog and discussions to improve mutual assistance. The full agreement can be viewed via this link: http://yosemite.epa.gov/oia/MexUSA.nsf/ae0396372fe73b828825671c007e0b90/208f81d47fde81b9882566b10061cbc2!OpenDocument

In addition to the state MOU with Mexico, several of the bordering counties with Mexico have MOUs with their sister cities or states in Mexico.

As with Mexico, and as outlined in the background of this SCIP, Arizona is the home of 22 federally recognized tribal nations. As an example of the requirements for local governments to work in concert with tribal nations, the first county/tribal MOU in Arizona (available from the Pima County Sheriff's Department) was signed in 2007.

In all cases each of the Emergency Response and Recovery Plans outlined in Table 31 are available from each local EOC. Because each county has a series of Mutual Aid Agreements (MAAs) with other counties and with the state to assist should the need arise MAAs for each of these agreements are also located in each county EOC.

In addition to being NIMS-compliant, each SOP and MOU complies with a series of additional federal and state laws, many of them dating back more than half a century. Below is a listing of applicable laws and regulations governing SOPs and MOUs.

Federal

- Federal Civil Defense Act of 1950, as amended, and Public Laws 81-920, 93-288, and 44-CFR-205 creating the Stafford Act
- Defense Civil Preparedness Agency, Circular Number 75-4, *NCP Planning*, August 4, 1075
- DCPA Publication, TR 82, "High Risk Areas", April 1975
- FEMA D R & R Series 1-20
- National Flood Insurance Act of 1968, as amended
- FEMA - 116/February 1987- Reducing Losses in High Risk Flood Hazard Areas: A Guidebook for Local Officials
- FEMA - 122/March 1987- Integrated Emergency Management System - Mitigation Program Development Guidance

State

- Chapter 2, Title 26, Arizona Revised Statutes as amended
- Arizona Nuclear Civil Protection — *Nuclear Attack Plan* (ANCP-NAP), November 1976
- *State of Arizona Emergency Plan* (Resource Management), January 1966
- Arizona Nuclear Civil Protection — *War Crisis Evacuation* (ANCP-WCE)
- State of Arizona, *Emergency Response Plan* (Peacetime Disasters) 1982
- A.R.S. §35-192
- A.R.S. §26-301 - 26-322
- *State of Arizona Hazard Mitigation Program Reports* (August 1980 - 614 DR and July 1, 1985 - 730 DR)

4.3.1.5. Who Developed Existing SOPs and Are They Current

The AIRS SOPs established in May 2006 by the SIEC with the assistance of the Arizona DHS. Since that time, there have been several revisions to the programming guide, however the MOU and other salient information has remained constant.

The MOUs and SOPs outlined above for county agencies incorporated in their Emergency Operations and Recovery Plans are all less than one year old as of September 2007. The state through DEMA recently contracted with a consulting company to determine if the state and counties are NIMS-compliant with the intent to take any required corrective actions in 2007. The audit indicated that each of the counties were NIMS-compliant. The auditor did make one global recommendation, to include tribal nations in the wording of the NIMS documents. This recommendation was accepted and completed in October 2007.

Each of the Emergency Operations and Recovery Plans reviewed for this SCIP indicated that most were written sometime around 2002, with several being earlier and others later than that date. Each plan however, had annexes that for the most part updated in 2007.

4.3.1.6. SOP Information Relayed with Supportive Training

Information about AIRS is available the PSCC website. Additionally, DEMA trainers share this information when they visit each of the local government's EOCs.

Although reports indicate that AIRS is intuitive to use and that training is probably unnecessary, there are plans to create a training module for this program (please see Section 4.5.4). The DPS and the PSCC both believe AIRS usage would increase substantially if there were proper training available. Therefore, as AIRS comes closer to its completion, training for this system will begin.

Through initial training and continuing education programs, first responders receive training to use their respective communications equipment. During training, they are taught how to change channels and frequencies, including how to access channels assigned to interoperability functionality such as the AIRS channels. The process and system requirements and use are

sufficiently intuitive that all entities are able to use it when necessary without AIRS specific training, which is evidenced by how often and how well the system works as a primary interoperability channel.

4.3.1.7. SOP Authority

Although SOPs are not legally binding in Arizona, MOUs are. As SOPs are most often a component of an MOU, failure to abide by the entire MOU (including the SOPs requirement) could nullify the MOU and other legal agreements they share. All parties, however, enter into MOUs and plan and try to abide by SOPs in good faith.

4.3.1.8. Mutual Aid Agreements and Interoperability

The state of Arizona has MOUs with local and tribal entities addressing AIRS usage. A copy of the AIRS MOU document can be found at the following location: http://www.azdps.gov/pscc/survey.asp.

The state of Arizona and each county have a series of MOUs that include an agreement on how to communicate during an emergency. In addition to each of the SOPs and associated MOUs in Tables 29, 30, and 31, the state maintains additional MOUs covering communications with its Border States and Mexico. In addition to covering communications, each MOU includes a full range of services that each entity can share when needed, as well as a method of payment for these services.

4.3.1.9. SOPs Developed to Cover All Disciplines, Jurisdictions and Levels of Government

SOPs authored by the PSCC and SIEC were developed to guide all interoperability channel users regardless of jurisdiction or discipline. The guidelines were drafted generically to allow individual user judgment to govern the proper actions in any given situation, but specifically enough to address each discipline's interoperability role to ensure successful interoperable connectivity. A series of SOPs are included within in tables 30, 31, and 32.

As the statewide radio system is deployed, no matter how a jurisdiction may elect to participate, a series of MOUs and SOPs must be developed by the SIEC Governance Committee. This development of MOUs and SOPs will take place via a series of open meetings with input and assistance from any public safety entity who wishes to participate in this process.

As the MOU provides the contractual relationship between users and providers, the SOP is required to determine the rules of engagement, the way that the equipment can be used. SOPs for the system of systems approach towards interoperability will comply with NIMS and the National Response Plan. It will include those items specific to communications (outlined in Section 2.1.1 of this SCIP) and will include a code of conduct and expectations of those using the system.

4.3.1.10. SOPs Tracked and Enforced to Ensure Compliance

Once an SOP is sent to DEMA, the procedure is checked to determine if it is NIMS-compliant. As an example of a periodic review, in 2007 DEMA funded a study to determine if all SOPs on file were NIMS-compliant. The results of the audit indicated that the state and county government were fully compliant.

4.3.1.11. Process to Ensure SOPs are Reviewed and Updated

Local governments in Arizona create SOPs to meet specific needs. A sampling of these SOPs is located in this report in Tables 29, 30, and 31. As noted by the users of these SOPs they are used on a regular basis. It is because they are used so often that whenever there is a shortfall for a service or procedure, a corrective action must be taken quickly. This dynamic method of handling SOPs ensures that each is reviewed and updated regularly by all parties participating in the SOP.

As states use SOPs, they generally do so when assisting local governments. In a similar fashion, when a state agency finds that there is a need for remedial action to mitigate an SOP's shortcoming, that action taken immediately.

The state controls few SOPs entirely. One SOP the state does control is for AIRS usage. The SIEC, an advisory committee of the PSCC, reviews the AIRS SOP on a regular basis to ensure it is current and applicable. When a procedural question arises either from the field or through the routine review process, the question is discussed in an open Committee meeting, researched as necessary and the section in question is modified, or left standing as written.

Additionally, an SOP governs communications between Arizona and Sonora, Mexico. This SOP is reviewed by both jurisdictions on a regular basis and modified as required. This SOP covers the kind of equipment in use, operation of that equipment, and procedures to contact and work with each government.

SOPs between the state and local governments are checked on a periodic schedule, or as events warrant. All SOPs that DEMA maintains with local governments have been verified for NIMS compliance in 2007.

4.3.1.12. SOPs Current with State Standards and Initiatives

AIRS is fully compliant with the standards and current initiatives of the state interoperability plan.

The SOP between Arizona and Sonora, Mexico is also fully compliant with the State's communications plans and with NIMS.

As the state and local governments are compliant with NIMS, SOPs between county government EOCs and DEMA are required to be NIMS-compliant.

4.3.1.13. SOPs Incorporate NIMS

As indicated earlier in this SCIP, Arizona complies with NIMS. Therefore, any SOP that incorporates communications is NIMS-compliant and complies with ICS. SOPs promulgated from any level of government, is sent to an agency NIMS Compliance Officer. A NIMS Compliance officer is appointed in each public safety agency and is responsible for ensuring that SOPs, MOUs, etc, comply with NIMS and the National Response Plan. The SOPs must reflect command, operation, and communications as directed by NIMS. The SOPs authored by the PSCC and the SIEC, the governing bodies of Arizona's Interoperability program, and all other state agencies must be NIMS-compliant by order of the Governor through Executive Order 2005-08, found in Appendix C

As the state of Arizona and all of its cities and counties are NIMS-compliant, it is expected that all SOPs are also NIMS-compliant.

4.3.1.14. ICS Training Given to Current Communications Personnel

The state of Arizona delivers ICS training as part of its statewide training program, while it is local government's responsibility to determine which communications personnel receive required training based on their roles. Communications Centers are typically equipped with an individual responsible for overall training coordination. Classes for new communications officers include all of the NIMS classes required for certification. DEMA has a website listing all of the classes taught on a regular basis. Currently, DEMA has over 135 instructors providing NIMS and other training. A short sample of what is available from DEMA can be found in Table 33. Training includes NIMS 100-800 classes as well as any other training that may be needed for state, local, and tribal entities. The state, however, does not offer communications training or certification for communications personnel (please see Section 4.3.1.15 for additional information).

4.3.1.15. State Credentialing of (Communications) Personnel

All classes taught by the state are tracked through a computerized tracking system. The respective data is available to the student, and those authorized to receive this information under United States and Arizona State privacy laws.

Currently, the Arizona State Land Department teaches and provides credentials for Communications Unit Leader (COML) and Communications Unit Technician (COMT) classes through the National Wildfire Coordinating Group (NWCG). Additionally, one of the few nationwide "train the trainers" instructors is a PSCC member. He instructs others on how to teach all of the required communications classes for communications credentialing. Representatives of the Arizona State Land Department, Arizona DPS and others attend these classes as well as many other state, local, and tribal representatives.

Once the PSCC Support Office learned that DEMA did not teach these all-hazard classes, the staff prepared recommendation to institutionalize them at DEMA. The recommendation included that the SIEC investigate the requirements for both classes, and how to customize the curriculum to Arizona's special needs.

4.3.1.16. COML Training Curriculum

As outlined in Section 4.3.1.15, although this training is being taught by the Arizona State Lands Department, it s believed by the PSCC Support Office that it properly belongs under the training facilities at DEMA. The Office will make that recommendation to the PSCC.

4.3.1.17. SOPs Include Qualified Personnel to Staff Communications Unit

The only existing SOP is for AIRS. This requirement is not necessary for the operations of AIRS.

When DEMA is asked for communications assistance by a local entity, a fully-equipped communications van is dispatched to the area of the incident. These vans were purchased by DEMA and given to local governments with the understanding the local government make the vehicles and staff available to others when needed. The corresponding SOP identifies that the van will include an accompanying qualified communications specialist who will assist the requesting agency with vehicle and communications technology operations. Local governments then reimburse the county providing aid as authorized by the state's MOU. As this is typically a local government function, the state does not maintain a listing of qualified personnel to staff the Communications Unit function. The state relies on the local communications centers to operate their administrative chains of command in an appropriate manner consistent with NIMS and ICS.

4.4. Training and Exercise Plan

There are two types of training and exercise plans that occur on a regular basis in Arizona. One type of training occurs at the local jurisdictional and discipline level and covers job basics (how to perform one's duties and responsibilities.) The other form of the training and exercise program is that conducted by the state. State required training is most often reimbursed to local governments and often deals with matters of state and national security. These classes may teach NIMS compliance, WMD, HazMat, etc. The state offers a large number of classes to local responders and each are taught in classes that are cross-discipline and cross-jurisdictionally as a matter of practice. These classes are for the most part, multi-disciplinary, multi-jurisdictional and include state, local, tribal, and federal entities. Included in all training is a communications component of an exercise. At the conclusion of the exercise, an after action report is written where every action is analyzed. This after action report perfected and shared with participants. This review, called a "hotwash," determines how best to improve performance, so that in a real-world experience precious time is not lost learning about technology that should already be part of the responders skill set.

During the month of October 2007, Arizona participated in the national level TOPOFF-4 exercise. During this exercise, a "dirty bomb" was detonated in Arizona. According to those that attended this exercise:

> The state team worked with Oregon and Guam and worked through their six objectives. The teams were tasked with creating incident management, intelligence management, public messaging, and information process, establish their emergency operations plans,

and start on recovery, while judging their effectiveness at each stage. This exercise included 26 state agencies, 26 local government entities (including 11 counties), three tribes, 37 non-governmental agencies, and four volunteer agencies. All of the communications vans in the state were brought to DEMA where their components were tested to ensure that they were working properly and that the users understood how the technology should work. TOPOFF-4 assisted Arizona understands their readiness to react to a series of unforeseen circumstances. One of the more valuable lessons learned from the TOPOFF-4 exercise is that the use of cellular telephones was compromised "prompting the use of "priority" cellular and conventional programs. The exercise scenario presumed that the commercial cellular systems would be unusable. The conventional phone system was not affected. One would expect that a multiple venue event like TOPOFF 4 that satellite systems would be similarly unusable. Ultimately, to ensure the ability of governments to exercise direction and control of their jurisdictions, contingency communications capabilities must exist.

TOPOFF-4 was used as an opportunity for the state to learn more about issues that are driving the nation's defense priorities as well as learning more about Arizona's vulnerabilities.

4.4.1. Statewide Plan for Interoperability Communications Training

A statewide training program for interoperability is covered in more detail in Sections 4.3.1.14-4.3.1.16 and 4.4.3-4.4.4-of this SCIP. The DEMA training program is designed to instruct emergency responders in NIMS and other courses as well as communications. However, the state does not maintain a separate training class or curriculum for "interoperable communications training." Rather, in most cases specific communications training is conducted by the Arizona State Land Department and by local governments. The PSCC Support Office is planning to recommend to the PSCC to ask the SIEC to review this policy, with a view towards transferring this training to DEMA.

4.4.2. Exercise Plan for State Agencies

The state has an extensive training program conducted by both individual agencies and DEMA. Exercises offered to state agencies are also offered to local and tribal entities as well. In addition to participating with local governments on exercises with cross-jurisdictional and disciplinary boundaries, DEMA conducts a series of rotating exercises on an annual basis. In one recent rotation, DEMA conducted tabletop exercises one year, followed by a functional exercise the following year, with a full-scale exercise the third year.

The training program for the new 700-800 MHz statewide solution, refer to Section 4.4.6 for their exercise programs that are being worked on, including exercises on chemical issues, pandemics, such as avian flu and cyber-terrorism.

Additionally, each year local governments conduct their own training and exercise programs. These programs are generally multi-disciplinary and inter-jurisdictional within a county government.

4.4.3. Exercise Plan for Local and Tribal Government

As outlined above, there is little difference between the exercises offered to local and tribal governments and those offered to state agencies. DEMA makes every attempt to recruit participants from all levels of government to participate in their training programs.

Table 32 is representative of the over 40 courses being taught by DEMA every month to state, local, and tribal entities. DEMA currently has over 135 instructors who teach FEMA G-Level classes to the responder community within Arizona each year. Training for the new 700/800 MHz statewide system, will be conducted prior turning on the system on a regional basis. Training will consist of technical, user, and supervisory level training for this new technology.

Sample Of Training Courses Existing In Arizona				
Class	**Methodology**	**Occurrence**	**Agency**	**Audience**
Incident Command System 300	Classroom	Multiple times each month	Open	All
Incident Command System 400	Classroom	Multiple times each month	Open	All
HazMat Classes (Responder awareness)	Classroom	Multiple times each month	Open	All
Citizen Corp Classes	Classroom, train the trainer	Multiple times each month	Train the trainer	Trainers
Multi-Hazard School	Classroom	Multiple times	Depends on class	All/Fire
PIO classes	Classroom	Multiple times	Open	All

Table 32 - SAMPLE OF TRAINING COURSES EXISTING IN ARIZONA

For the purposes of illustration, we sampled one month of training conducted by DEMA. Table 33 represents the courses taught during this time, and 67 separate classes.

DEMA Classes (2007)	
Class Number	**Title**
MAG400	Advanced Incident Command System
MAIS200	Basic ICS
MAG417	Community Emergency Response Team Train-the-Trainer
MAU200	First Responder Operations
MAG191	ICS/EOC Interface
MAMGT-313	Incident Management/Unified Command
MAG300	Intermediate ICS
MAIS100	Introduction to the ICS
MAIS700	Introduction to NIMS
MADEMA291	Joint Information Center Training
MAIS362	Multi-Hazard Emergency Planning for Schools
MAG290	Public Information Officer
MAG270.4	Recovery from Disaster

Table 33 - CLASSES TAUGHT BY DEMA (SEPTEMBER 2007)

4.4.4. Policy Implications and Certifications

As a matter of public policy, and to ensure public safety, the state stands ready to assist local and tribal governments in creating training that is of value to them. Training largely follows the rules and regulations created by DHS, as most often local governments require DHS assistance to help fund the training. DEMA, however, is able to provide training on a cost recovery basis to any entity.

As the statewide radio system emerges as the interoperable radio solution of choice, the PSCC would prefer to require all responders in the state of Arizona to include as part of their annual in-service training refresher courses (as listed in the previous Sections 4.4-4.4.3 and listed in Tables 32 and 33) on the proper use of interoperable radio devices. These annual in-service training components should be established and approved by DEMA in consultation with the PSCC. Additionally, personnel should be tested on their understanding of the SOPs as well as meeting the defined requirements when performing their job to ensure the safety of the state's citizens and the responders themselves.

In addition to regular user education, exercises should be conducted across jurisdictions and disciplines to ensure the practices used are up-to-date and well understood. This can be done by conducting full-scale or tabletop exercises, but realistic exercises are most useful to determine plan viability. These exercises should be conducted regularly as response times, operational limitations, personnel, and equipment change. Tabletop exercises are useful to

discuss, plan, coordinate, and/or document emergency response plans and procedures, normally at the command level. Full-scale exercises give experience and generate feedback from all levels of responders.

4.4.5. Process by which the State Will Develop Manage, Maintain, and Upgrade or Coordinate as Appropriate

Classes are taught year-round in Arizona. Registration is Web-based and available at www.dem.state.az.us/

The curriculum for these classes comes from several areas. Class material may come from FEMA or other areas of DHS. It also may come from those who require the training. DEMA has the ability to create classes on almost any subject to fit responder needs. Specific requirements for local government training are determined by the local authority.

4.4.6. Process for Offering Training and Exercises

The state offers training to all levels of government that includes exercises at a multi-disciplinary level. DEMA offers NIMS classes (as outlined in tables 32 and 33). With respect to the long-term solution of a new 700-800 MHz trunked radio network, training will be required in many areas of operation. Operational training on proper use of the devices will be necessary for individual users; maintenance training will be required for maintenance of the network as well as operation of the network features. It is anticipated a train-the-trainer program will be developed as network development progresses. This training will be required as a deliverable from the manufacturer. DEMA offers a complete curriculum to state, local and tribal entities. The class schedule may be reviewed at their website www.dem.state.az.us. In addition to listing available classes, DEMA actively recruits people to attend its classes using an extensive outreach program. The outreach efforts include the Director of the training facility making contact with local government EOCs to ensure they are aware of classes being taught as well as any requirements or certifications that may be coming up in the foreseeable future. This outreach to local government includes advising them about exercises being conducted in the state, and how, if they wish can participate.

In addition to the Director of Training, DEMA has several training coordinators who also visit with EOCs and emergency managers to keep them informed of classes and upcoming exercises.

Additionally, DEMA makes itself available to local and tribal governments to teach courses that are tailored to the needs of the individual jurisdiction.

4.4.7. Process Ensures that Training is Cross Disciplinary

All training conducted by DEMA is, to the greatest extent possible, cross-disciplinary. Instructors representing two different disciplines usually teach classes. This is done to ensure that those attending the classes understand how important it is to include personnel from

other disciplines in training, and how important it is to represent a true first responder community.

To further help training become cross-disciplinary, whenever possible, classes are open and encouraged for all who wish to attend. There are exceptions to this, depending on the nature of the classes or prerequisites. For example, there may be some HazMat classes that law enforcement may not meet the minimum requirements and thus would not be allowed to take, or other classes for law enforcement due to their specialized requirements that fire fighters cannot attend.

4.5. USAGE

A person's ability to use equipment proficiently increases as they become more familiar with it through repeated use. It is the PSCC's long-term goal to migrate to a statewide, interoperable radio system that will be used by state, local, tribal, and federal government entities on a daily basis. Until that time however, the state will continue to promote using AIRS for interoperable communications. AIRS is the everyday radio system of choice and familiarity with its capabilities is enhanced by this daily use. The PSCC also supports those jurisdictions that have already migrated to standards-based radio systems that will be compatible with the state radio system when it is enabled.

- Arizona has just begun working on its interoperable solution that will eventually be deployed. It is for this reason that this section is divided into nine subsections. This section will discuss the use of interoperable equipment by local government as described by EOCs in Arizona
- The second section of the usage section will discuss the regional systems that are in place in Arizona today
- This third section will discuss a plan that will be developed one the statewide interoperability solution is deployed. This system of systems solution will include a statewide 700 MHz component and a high-level network connection component that will connect jurisdictions that elect not to join the 700 MHz state system
- This section will report on the AIRS interoperability solution, as it is deployed today and as it will be deployed when this system is completed
- The strategy for interoperability in Arizona
- Interoperability for local, regional, tribal, and state events
- Procedures for escalation and obtaining outside support
- Mutual aid agreements in place for specific occasions
- Interoperability used for disasters or other significant events requiring support for regional, state, or national assets

4.5.1. Local Government Interoperability

In an attempt to determine how often interoperable communications were used in Arizona, the best data comes from local governments. We asked EOC directors, managers, and coordinators for assistance in determining interoperability use. We asked each of the EOCs the following questions:

- Does your county have interoperable communications?
  - If so, what are they?
  - How often are interoperable communications used in your county?
  - Are interoperable communications used for (planned) regional events?
  - If so, please describe that use

Table 34 indicates the results of this survey with nine of 15 counties responding.

Findings of interoperable solutions:

- Every EOC reports that they use interoperable radio communications
- Our survey revealed (based upon Tables 29, 30, and 31) each county has several MOUs and SOPs each having communications components
- We learned from the input from local government that the more interoperable solutions are used, the easier they are to use in times of emergency or crisis.
- We also learned that simple is preferable to complex. For example, console patching is used on a daily basis, while gateway-patching using another piece of hardware is used less often. The single exception to this was in Santa Cruz County, where they use their cross band gateway solution on a daily basis. Santa Cruz County use of a more complex solution on a daily basis proves the first conclusion; frequent use is preferable to occasional use.
- Mutual aid frequencies, used by AIRS is used without pre-planning, but deploying one of the mobile command posts was not as user friendly and therefore not used as often as we anticipated.

EOC Interoperability Use				
County	**Interoperable Equipment**	**Frequency of Use**	**Planned Events**	**How Often Used**
Cochise	-Count Mutual Aid (CMA) channel	Frequently – anytime multiple agencies are dispatched to an event	-Cochise County Fair, -DUI Task Force, -La Vueita de Bisbee (Bike Race)	Various times, some held annually
Coconino	-Sheriff and fire department coordinate joint dispatch for law enforcement for greater Flagstaff -Uses AIRS -Police and Fire Advisory Committee (PFAC) has common frequency as part of their mutual aid response	AIRS rarely	Written after the last law enforcement event – never used	
La Paz	-Interoperable communications via dispatch (consolidated Public Safety Answerng Point (PSAP)/911) -Radios capable of communicating with DPS/EMSCOM	Used daily for both routine and emergency events As needed	Used as routine	Daily and during exercises
Maricopa	-800 MHz with talk groups -Cross band matrixed repeater -EOC, 800 MHz capable to communicate with DEMA -EOC VHF radio to communicate with others in that spectrum	Used on a daily basis -For exercises -For exercises -For exercises	800 MHz system used routinely- other equipment used as needed for emergencies or for exercises	Daily Other equipment used as needed and for exercises
Mohave	-AIRS -State Communications Vehicle	-1-5 times/yr -Every three months	-No -Laughlin River Run	As needed Every 4 months and during Exercises

EOC Interoperability Use (Continued)				
County	**Interoperable Equipment**	**Frequency of Use**	**Planned Events**	**How Often Used**
Pima	-Gateway (tri-band repeater) -Cross-band, matrixed repeater -AIRS	-Used most often -Used Infrequently -AIRS, TBD	-Large bike race	Exercises 4-times a year
Pinal	-Console patch -Mobile command vehicle (cross-band, matrixed repeater)	-Several times weekly -Infrequently	-Annual biker run -Annual Country Thunder Music Event - Regional exercise -Statewide exercise	Several times per year
Santa Cruz	Radio, cross band matrixed repeater, AIRS, Common VHF frequencies, Data- Wide-Area Information Server (WAIS) software	-Regularly -Regularly -Regularly -Regularly	-Wildland fires -International incidents	All equipment is used on a daily basis
Yavapai	Two regional dispatch centers	Daily	Any significant event	Event dependent

Table 34 - ARIZONA COUNTIES EOC INTEROPERABILITY USE

4.5.2. Regionally Shared Radio Systems

In those areas of the state with shared radio systems, daily interoperability exists today. In those areas (generally larger jurisdictions), their interoperability level using the SAFECOM Continuum (seen in Figure 11 of this SCIP) is at the highest level of interoperability within their jurisdictional environments. When agencies are called to assist other areas, or when requiring assistance from others, they rely on AIRS for communications. AIRS is described in Section 4.1.7.1 of this report and is described in the SAFECOM Continuum as Shared Channel Level Interoperability.

Absent the areas in the state in which there are existing multi-jurisdictional and multi-disciplinary radio systems, Arizona does not typically use a common radio system, with the single exception of the AIRS network for emergency radio traffic. AIRS is fully interoperable and available to any jurisdiction or emergency responder no matter his discipline who has agreed to abide by the MOU governing system use.

4.5.3. Statewide Interoperability Solution

Realizing the Arizona statewide radio network is not yet constructed, we will describe the anticipated process by which the system will become operational and used on a day-to-day basis.

4.5.3.1. Technical Testing

As each region of the system "is turned on", there will be a complete technical testing of the system. The system will be checked for quality to ensure that it meets coverage requirements, functional requirements, public safety standards, and applicable security requirements to guarantee the integrity of the network.

4.5.3.2. Training

Training will commence prior to operational activation and shall be ongoing. This first phase of training will be directed at those who will be charged with maintaining the radio system. To ensure the subject matter is appropriate, initial training will be the responsibility of the manufacturer and included as a part of the contracted vendor proposal. Classes will be held so that key members of the state will be in a position to train others when the need arises through a train-the-trainer approach.

4.5.3.3. Operational testing

To ensure the system operates as expected, operational testing will commence after technical testing. This testing will be conducted by those who have been trained on the system. The system must meet or exceed the functional specifications described in the Request for Proposal (RFP) and the bid response.

4.5.3.4. Train the Trainer Program

As this is a statewide system, it will be imperative that certified trainers be available around the state to provide continuing education as they train others on the proper use of the new radio system. For many users, this may be the first time they have used trunking technology, which brings special challenges and subsequent training requirements to many users.

4.5.3.5. Go-Live

Once the state is confident the system is operating properly and the necessary personnel are trained appropriately, the system will become operational. Activation will be accomplished regionally to limit potential complications and to determine the effects of each section of the system as it is made operational.

4.5.3.6. Planned Exercises (as appropriate)

Once the system is in place, it will be tested within a pre-arranged scenario to verify the system is operating correctly, the personnel are trained sufficiently, and if there are problems, they are identified and corrected in a controlled setting.

4.5.3.7. After-Action reports

To evaluate the training and gather lessons learned, a series of after-action reports will be generated. The purpose of these reports is to validate information and to identify, outline and perform necessary corrective action.

4.5.3.8. Re-training

Because of the after-action report, it is likely some additional training will be necessary. Any additional training modules will be created as required and will be made available for reuse.

4.5.3.9. Annual Certification

As the statewide radio system will utilize state-of-the-art technology to be refreshed throughout its lifecycle, it will grow in complexity and functionality, necessitating a yearly user recertification.

4.5.3.10. Metrics

The new statewide radio system will use computer-based technology located in a Network Operations Center that will measure, distribute, and control call volume through software applications. For the first time in Arizona, statistical measurements will be enabled on every radio call made through the new 700 MHz radio system.

As the new 700 MHz component of Arizona's overall interoperability solution is deployed, emergency responders will use the system on a daily basis. This system represents the highest level of interoperability on the SAFECOM Continuum (as seen in Figure 11). Those agencies not operating directly on the statewide system will be able to operate as they do today. They will be able to communicate with each other using their own networks and will, on a regional basis,

be able to link into the statewide radio system via a high-level network interface (gateway device), or by sharing channels with the state. This will afford them either a Gateway Level or a Shared Channel Level of interoperability as measured by SAFECOM.

The PSCC promotes the concept of interoperability on a daily basis through an Outreach Program, open public meetings, as well as a user-friendly website and a regular newsletter. Additionally, there is continued dialogue between the PSCC and the local agencies through dialogue with the agencies' representatives who serve on the Commission

4.5.4. AIRS

When attempting to quantify the use of AIRS we learned that no records are kept on the use of this interoperable solution, as the nature of the technology does not provide any mechanized way of keeping these records. As indicated by the local governments survey, AIRS is used, however due to the current level of technology, there is no way of tracking call volume. The implementation process as described for the 700 MHz radio component of Arizona's interoperability solution is also true for AIRS. AIRS training is being developed by the SIEC. The Operational Subcommittee is reviewing all of the information available and plan to release a beta-training program in the not-too-distant future. This training program will be tested and refined before being approved by the PSCC. Thereafter, the SIEC will work with DEMA to fund this as part of the regular training and exercises that take place within Arizona.

The AIRS network affords the opportunity for any emergency responder to communicate with others as needed via a suite of fully interoperable, patched radio frequencies in the UHF, VHF, and 800 MHz bands. Although AIRS is still under development, it is currently available in most areas of the state. By mid-2009, AIRS will be available statewide.

The AIRS Programming Guide is included in the following link:
http://www.azdps.gov/pscc/documents/AIRSregchannelassignments012307.pdf

4.5.5. STRATEGY

Arizona has developed a strategy to achieve statewide interoperable communications. The key elements of this strategy are shown in Table 35.

Short-Term Strategy For Interoperability		
Strategy Number	**Strategy**	**Due date**
1.1	Demonstration Project for the 700 MHz Project-25 Radio System	April 2008
1.2	Use interoperability channels and capabilities for day-to-day interoperable communications	Mid-2008
1.3	Complete statewide microwave upgrade to digital	2013
1.4	Provide that access to interoperable communications capabilities is kept as simple as possible for end users (700 MHz Radio System)	2013

Table 35 – SHORT-TERM STRATEGY FOR INTEROPERABILITY

4.5.6. INTEROPERABILITY FOR LOCAL, REGIONAL, TRIBAL, AND STATE EVENTS

Interoperable communications is used daily to handle local incidents. It is used less regularly, however, for incidents at the regional and state level, primarily because of each county's size. Unlike many states, Arizona has a relatively large landmass and few (15) counties. Events may be planned or unplanned. In most unplanned events, such as a police chase, the immediate need is created, and most often ends within a few minutes. In the case of a fire, the need often lasts longer. For planned events, such as the Super Bowl or the New Year's Eve festivals, etc, other, more elaborate interoperability solutions involve extensive planning, designing before implementation.

The state has two ways of realizing interoperability in large-scale events, both planned and unplanned.

When an incident escalates beyond the local level and additional communications assets are required, the local government can request the use of a command communications vehicle. There are five vehicles placed in strategic locations around the state to ensure the shortest response times. When deployed, the vehicles are staffed by NIMS-qualified Communications personnel. From the time a call is placed until the time this asset is deployed on location is generally within three hours. These vehicles all have the same equipment, which consists of the following:

- Cross-band communication device (i.e. matrix switches and audio bridges)
- Full suite of radios, including VHF, UHF, and 700/800 MHz
- Satellite communications
- Generator

- One of these units is further equipped with living quarters on board that is available for extended periods of operation
- The state also uses AIRS, which represents the primary, and most-often used form of interoperability in the state

4.5.6.1. Frequency of use

There is no way to accurately measure AIRS usage in its present configuration. As designed and constructed, the network does not require an operations center and there is no managing software to measure and report on usage.

DEMA becomes aware of the use of the communications vehicles after they are notified by the local government entity who maintains them. Based on anecdotal information at this time, it is believed these vehicles are deployed approximately 10 to 15 times per year.

4.5.6.2. Frequency of Use for Localized Emergency Incidents

Based on anecdotal information, AIRS is used by local government on a daily basis. The use of other interoperable devices or processes is not monitored and is therefore unknown. In an attempt to determine AIRS usage County EOC directors, managers, and coordinators were asked if they had a way of determining how much AIRS was used. The limited information gathered is available in Table 34.

4.5.6.3. Applicability

While discussing this section of the SCIP it must be noted that there is no differentiation made for interoperable communications between any levels of government. The use of interoperable communications and planning required for large scale events apply to local, regional, tribal, state, and federal entities that must work together in Arizona.

4.5.7. Procedures for Escalation and Obtaining Outside Support

When local government entities require outside support they follow the NIMS protocol. Specifically, a local government would contact the county government, which in turn would contact the state EOC. Should the state need additional resources, it would use the Interstate Emergency Management Compact (EMAC) and then turn to FEMA.

4.5.8. Mutual Aid Agreements in Place for Specific Occasions

In addition to MAAs used for day-to-day operations, there are some agreements for specific functions including but not limited to: parades, marathons, golf tournaments, NASCAR races, Super Bowl, Tempe New Years Eve Celebration, Fiesta Bowl, etc.

Before each event, planners go through an extensive process attempting to determine every eventuality that could take place at the event or function. To the extent possible, MAAs are arranged with those parties who have a reasonable expectation of being required for the event.

4.5.9. Interoperability Used for Disasters or Other Significant Events Requiring Support for Regional, State, or National Assets

The state of Arizona has signed the EMAC. All counties within the state have signed MOUs with the state to provide emergency assistance when necessary within the state. When activated either within the state or outside of the state, NIMS is the protocol used for all communications, both within the operating environment and for interoperable communications with others. Table 7 from FEMA outlines disasters in Arizona and we assume communications to facilitate restoration of government services was used. Table 8 supplied to the PSCC from local government ECO directors outlines the disasters during which interoperability was used to support emergency assistance

5. STRATEGY

5.1. INTEROPERABILITY VISION

Before AIRS (or its predecessor IARS), Arizona emergency service providers and their supporting organizations found themselves in a position of not being able to communicate with each other in times of emergency. This scenario would play itself out on a daily basis regardless of the size of the incident (two law enforcement units in a vehicular chase, or dozens of departments responding to an incident of magnitude.) Oftentimes communications barriers are created by incompatible technology or public service providers have not planned adequately to provide these communications. This lack of communications has caused needless delays in providing life-saving services to those who need them and puts the lives of public safety officials at risk by not giving them the lifeline they need to summon assistance while they are helping others. The PSCC has therefore created a vision addressing these shortcomings.

The vision for statewide interoperability is one that will enable any public safety official to be able to communicate with any other public safety official, "when their mission dictates, in real-time, and on demand[24]." This is not to say that every police officer should be able to communicate with every firefighter. Rather, it is the communications requirement as determined by a Unified Command Structure (a component of NIMS).

5.2. MISSION

The PSCC's mission for statewide interoperability is to enable the "seamless interagency and inter-discipline public safety communications without complicated processes or procedures for task force events, mutual aid incidents, as well as day-to-day operations irrespective of agencies' technical systems[25]." This mission as defined by the PSCC aligns with the overall mission of this SCIP. This also helps to lessen the often-seen problem that the only way agencies are able to communicate with each other requires extraordinary processes that hinder field operations. The mission of the SCIP is to create a seamless inter-jurisdictional and inter-disciplinary fully interoperable radio system, for all public safety entities operating within the state of Arizona.

5.3. GOALS AND OBJECTIVES

To achieve its interoperability mission, Arizona is pursuing a system of systems approach designed to interconnect a series of disparate frequency bands together thus allowing responders on separate systems to interoperate with one another. These systems will include a

[24] Public Safety Wireless Network (PSWN) publication *Why Can't We Talk.*

[25] PSCC mission statement

700 MHz statewide standards based radio system, a series of high-level network connections that will enable those entities who do not join the 700 MHz system to connect to it. The completion of AIRS enables a basic level interoperability solution using national and state interoperability channels, and a statewide digital microwave backbone network to enable this migration.

By deploying the 700 MHz Demonstration Project and enabling, the means for larger 800 MHz systems to join the state's efforts will be the first major steps of achieving Governor Napolitano's stated goal of 85% interoperability. These enhancements will provide basic communications for all public safety providers operating within the state. Deployment of the 700 MHz system will elevate statewide interoperability further toward Arizona's ideal vision of complete statewide interoperable communications.

The PSCC recognizes the critical need to plan for more than technology in solutions for a statewide interagency communications system and its supporting operations plan. The PSCC therefore derived the multi-faceted discrete goals and their associated objectives presented below from several sources including its published *Concept of Operations* (2005) and *Needs Assessment* (2007).

5.3.1. Established Goals

5.3.1.1. Achieve Interoperable Communications 85% of the State's Population

Objectives: The cornerstone of this goal will be the completion of the Demonstration Project expanding the regional systems of Phoenix and Yuma regional systems.

5.3.1.2. Increased interoperability statewide

Description: Increase the number of users that are able to interoperate with the state and with each other.

Objectives: Increase the number of local, tribal, and federal agencies that can connect to the state radio systems via the use of enhanced radio communications. This would include linkages to the 700/800 MHz radio systems and AIRS by means of technology currently available.

5.3.1.3. Increase use of Statewide Microwave System

Description: Increase the use and update the statewide microwave system to enable state, local, tribal, and federal entities to participate in a statewide radio network. This will be the conduit or network required for the system of systems approach to interoperability.

Objectives: Encourage the state, local, and tribal governments to work together to migrate the statewide microwave system from analog to digital technology.

5.3.1.4. Publish User-Based Standards and Guidelines

Description: Publish an initial set of user-based standards and guidelines for technology consistent with the long-term strategy for agencies currently implementing changes.

Objective: This goal will be achieved by publishing and implementing the SCIP and other related documents for statewide implementation.

5.3.1.5. Create and Maintain a Scorecard for Statewide Interoperability

Description: Create a scorecard to assess current interoperability activities occurring throughout the state and in adjoining states.

Objective: By utilizing information gathered during the SCIP development process and use of CASM, a thorough understanding of interoperability initiatives has been gained. CASM also allows for continued validation of that understanding as well as a means to monitor and demonstrate progress.

5.3.1.6. Continual Review and Enhancement of Statewide Strategies and Activities

Description: Complete analyses and other data gathering efforts to feed follow-on activities.

Objective: After the SCIP is completed and embraced by the interoperable communications users, regular review and updating of the plan will be the foundation of future statewide strategies and activities.

5.3.1.7. Development and Implementation of Technical Alternatives to Promote Interoperability

Description: Develop and implement a strategy for defining technical alternatives for the statewide solution.

Objective: By completing the Conceptual Design process and report, the state will identify communications solutions the benefits and drawbacks of those solutions, which in turn will be compared to the identified needs of all levels of users.

5.3.1.8. Creation of an Outreach Program to Define and Establish Interoperability

Description: Establish an education and communications program (outreach) defining interoperability, PSCC goals, and the path to the solution.

Objective: Create an Outreach Program for state and local entities that will educate political decision makers as well as system users. This approach will ensure the dissemination of accurate information and uniformity of thought as well as encourage input from all entities to the project office. This will be completed by the regular use of newsletters, a user-friendly Web page, and extensive outreach program. The outreach will include presentations designed to

solicit participation within the PSCC and SIEC. Groups to be contacted include ports, mass transit, transportation industry, DHS/OEC's Federal Partnership for Interoperable Communications (FPIC), non-governmental agencies, and tribal entities.

5.3.1.9. Develop A Current Inventory of Equipment to Define Interoperability Solutions

Description: Develop a current inventory of subscriber equipment to assist with scoping and funding the future solution. Understanding equipment will also help the state understand how they can interconnect with others when necessary

Objective: The inventory that the state has of all of the radio systems is several years old, and has not been updated. As the two UASIs and the state are planning to use CASM for their inventory and interoperability assessment, the PSCC anticipates asking local and tribal governments to enter their data into that database. With CASM, a true, dynamic picture of the operating environment can be seen at any time.

5.3.1.10. Develop and Implement Statewide Operational Standards

Description: Before state, local, and tribal entities can communicate with each other, they must develop and implement statewide operational standards. These standards will then become the operational roadmap that will assist in providing instructions on communications.

Objective: There are documents and authorities in place that will collectively ensure all communications users seeking interoperability have the same operational guidelines and understandings. These documents include the *Conceptual Design*, and the AIRS MOU document. The PSCC, the SIEC, the SCIP and the PSCC Support Office provide the authority needed for statewide operational standards.

5.3.1.11. Identify and Secure Dedicated Funding

Description: A statewide radio system is a long-term, expensive investment in the state's infrastructure. It is important to secure a long-term sustainable funding mechanism to ensure that the investments can be built over the long-term. Therefore, the PSCC must aggressively identify and secure dedicated funding source(s).

Objective: Pursuit of funding will naturally be a high priority for the state. Identified funding sources are dedicated state funds; grants through DHS; and sources yet to be identified. To ensure funds are available and appropriately applied, the PSCC will maintain oversight of fiscal issues.

5.3.1.12. Obtain and Sustain Legislative Support

Description: Secure short- and long-term legislative support by the legislative bodies.

Objective: Legislative support is recognized as a priority for project success. To ensure the publicly elected decision makers are fully informed on matters relating to interoperability, the Outreach Program will include components designed specifically to address the political bodies of government.

5.3.1.13. Implement Tactical Improvements to achieve Interoperability

Description: Assess and implement tactical improvements on a county-by-county basis to achieve quick wins to be communicated as progress. This will assist the state in determining how each jurisdiction can interoperate with the state.

Objective: The objective is to encourage and assist local governments in successful improvements promoting quick regional success. These smaller projects will show accomplishments and will be improvements to statewide communications. Continual monitoring of local projects while conducting Outreach and CASM reviews will be the process to identify opportunities for these quick wins.

5.3.1.14. Establish Cross-Border Communications

Description: To establish cross border communications between our respective law enforcement and firefighters officials and work towards a standardization of format for data exchange in the future.

Objective: To complete the work just beginning with the respective federal/state/local entities that will enable the exchange of voice and data that will aid in law enforcement, and promote officer, and public protection.

In reviewing each of the goals and objectives of this plan, each supported multiple aspects of the short- and long-term goals of the SCIP. Those are summarized on the Goal and Objective Matrix (Table 36).

Goal and Objective Matrix					
Goal	**Digital Microwave**	**AIRS**	**Demonstration Project**	**700 MHz Component**	**High-Level Network Connection**
Interoperable Communications to 85% of the state's population within 2 years	X	X	X		
Increase users on state system	X	X	X	X	X
Increase use of statewide microwave, leverage investment for all	X				X
Standards and guidelines for interoperability		X	X	X	X
Assessment of interoperable communications			X	X	X
Data gathering and analysis	X	X	X	X	X
Strategy for statewide alternatives	X	X		X	X
Education, communications and outreach Program	X	X	X	X	X
Inventory of subscriber equipment (CASM)	X	X	X	X	X
Develop and implement statewide interoperability Standards	X	X	X	X	X
Identify and secure funding	X	X	X	X	X
Secure legislative support	X	X	X	X	X
Assess and implement tactical improvements on a county-by-county basis	X	X		X	X

Table 36 - GOAL AND OBJECTIVE MATRIX

5.3.2. Strategy for Interoperability

The *ConOps* established a pathway toward interoperability that the PSCC has adopted as its guide. The following strategies are from the *ConOps* Report, pages 31-33 as the strategy for statewide interoperability. The PSCC holds this report to benchmark much of their progress.

5.3.3. Summary of Strategy for Achieving Statewide Interoperability in Arizona

Based on the information presented in previous sections and the goals, constraints, and requirements related to achieving interoperability in the state of Arizona, an overall strategy was developed. The strategy, while uniquely crafted for the specific needs of Arizona, aligns with best practices recommended by industry sources. For instance, it includes all the best practices for interoperability strategy developed by the Public Safety Wireless Network (PSWN) Program (now formally part of SAFECOM). The four major best practices for interoperability strategy according to PSWN are listed in Table 37.

Interoperability Best Practices	
1)	Cultivate Political and Stakeholder Support
2)	Determine System(s) Planning Requirements
3)	Provide Education to Groups Within the State
4)	Coordinate the Activities of Multiple Agencies and Build Consensus

Table 37 - PSWN BEST PRACTICES FOR STATEWIDE INTEROPERABILITY[26]

All of these activities, in addition to other key activities, comprise the strategy for the state of Arizona. The strategy can be summarized on two levels: short-term strategy and long-term strategy. Both components are described below and further described in Section 6 Implementation.

[26] Source: SAFECOM, http://www.safecomprogram.gov/SAFECOM/

5.3.4. Short, Medium, and Long-term Strategy

Short-Term Strategy

In the *Con-Ops* report as in this SCIP, short-term, is identified as a one to three years requirement. According to the *Con-Ops* report, adopted by the PSCC, it is imperative that the PSCC and its constituents aggressively pursue the county-by-county incremental improvements, gain several quick wins that can be actively communicated to stakeholders, and expands the influence of the PSCC itself. Addressing operational policies and procedures immediately, for instance, allows for significant progress while more time-consuming efforts, such as securing funding and procurement activities are executed in parallel. The short-term strategy for the PSCC to pursue is as follows:

- Publish initial set of user-based standards and guidelines for technology consistent with the long-term strategy for agencies currently implementing changes
- Create a scorecard to assess current interoperability activities occurring throughout the state and in adjoining states
- Complete analyses and other data gathering efforts to feed subsequent next activities of the statewide strategy
- Develop and implement a strategy for defining technical alternatives for the statewide solution
- Establish an education and communications program that defines interoperability, PSCC goals, and the path to the solution
- Develop inventory of subscriber equipment to assist with scoping and funding the future solution
- Complete the AIRS interoperability solution
- Develop a Strategic Technology Reserve to enhance the continuity of government
- Begin working with mass transit, ports, and tranportation industry as they are a vital link into the safety of the citizens of the state
- Develop and implement statewide operational standards
- Aggressively identify and secure dedicated funding source(s)
- Secure short- and long-term legislative support by legislative body
- Assess and implement tactical improvements on a county by county basis to achieve quick wins that can be communicated as progress
- Establish/leverage the PSCC Governance subcommittee, the PSCC Funding subcommittee and the SIEC operational policies and procedures to address operation, governance, ownership, and funding strategies
- Encourage opportunities to share communications facilities and infrastructure among agencies

The SCIP and associated PSIC funding, encourage pursuit of many of the opportunities adopted by the PSCC to encourage interoperability in Arizona. These include the ability to enhance regional network to eventually connect to the statewide system, the ability to continue to build the statewide microwave system, to augment the state's Strategic Technology Reserve for the continuity of government, and create high-level network connectivity to what will become the statewide radio system.

Medium-Term Strategy

The *ConOps* report did not anticipate the need for building a medium-term strategy; we find that there is a need to do so, as it is a realistic approach of project management. In all of these strategies, it is possible that they may start in the short or medium-term but continue for many years. A case in point is the governance of the statewide interoperability radio system. Governance will be evolving for the duration of the project. Medium-term projects are those that have a start within three to five years and may continue for many years. Projects and initiatives that fall into this category include:

- The creation of modern regional enhancements to the statewide radio network
- A migration plan that enables state, local, tribal, and NGOs to join the statewide radio network in an orderly manner with the least amount of disruption to their service or to the network as possible
- A training curriculum at DEMA that includes classes necessary for communications certification, including COML, COMT. Additional training may also be included in this initiative
- The creation of a standard operating procedure/memorandum of understanding clearinghouse in the state to ensure that policies and procedures are to the extent possible standardized and NIMS-compliant

Long-Term Strategy

The *Con-Ops* report also suggests building off the achievements and momentum of the short-term strategy, the PSCC should employ a long-term strategy that achieves all of the requirements and objectives described in this document and supporting documentation. Long-term agreements to share facilities and infrastructure, increased cooperation and partnership in provision of public safety, and user-based standards for technology are a few of the long-term strategies that must be achieved. On realizing the long-term objective, the Mission and Vision of the PSCC will be achieved and public safety agencies within Arizona will finally experience seamless communication when helping the citizens of Arizona. As such, the long-term strategy, which spans years 5 through 8, is comprised of the following:

- Secure long-term funding support (e.g., capital for build-out, on-going maintenance requirements, and technology refresh)
- Define a long-term governance and ownership model

- Pilot an interoperable solution based on the new architecture to assess effectiveness and plan for statewide deployment
- Publish a full deployment plan and partially deploy a statewide, interoperable solution including requirements for high-level network connections to the statewide interoperable radio system
- Deploy new microwave infrastructure
- Fully deploy the statewide, interoperable solution
- Deploy a statewide interoperable data solution
- Complete work on interstate, and international interoperability solutions
- Continue working with the tribal nations to enable them to join the statewide radio system

Specific activities, milestones, durations, and dependencies to support the short- and long-term strategies are described in detail in Section 6. Execution of this two-tiered strategy provides the road map for interoperable communications and the increased protection of life and property in the state of Arizona. However, to realize the strategy and put it into action, the funding strategy must be carefully and aggressively executed as defined in the next section.

5.4. STRATEGIC INITIATIVES

The PSCC has a series of strategic initiatives, all of which support the eventual build-out of a 700 MHz fully interoperable radio system for the state of Arizona as a part of its overall interoperability solution. The initiatives below reflect project priority as identified in the Public Safety Interoperable Communications Investment Justification process. Additionally, each initiative was given a timeframe by which it must be started to maximize their effect.

5.4.1. Strategic Initiative #1 - Develop AIRS

Description: The PSCC will continue to update and build out the AIRS suite of interoperability systems. These updates will improve AIRS coverage and provide additional users both within and outside of Arizona with connectivity through the system. By design AIRS is compatible with both existing and new technology, increasing its future sustainability as a viable statewide interoperability solution.

Prioritization: High

Time Frame: Short

Action Plan:

- Deploy remaining AIRS suites to best address identified coverage gaps
- Continue to develop and enhance preliminary AIRS NIMS-compliant SOPs
- Test AIRS to ensure compliance with technical and operational specifications
- Provide training to existing and new users on AIRS capabilities and operational support applications

  Assess the operational effectiveness of AIRS system through an Homeland Security Exercise and Evaluation Program-compliant series of public safety exercises

Critical Milestones:

- Expend committed Homeland Security Grant Program funding prior to July 30, 2008

Metrics:

- Quantitative report on the number of deployed AIRS suites
- Assessment of the estimated improvement in AIRS coverage
- Quantitative report on the increase in the number of participating agencies

Challenges/Hazards:

- Impact of staffing changes and resource availability
- Impact of seasonal weather issues that could impact deployment of AIRS suites

5.4.2. Strategic Initiative #2 - Enhance Modern Regional Systems

Description: As the state continues to identify, design, and construct the 700 MHz trunked radio network, local networks will continue to require maintenance and enhancement. These local enhancements will be required to support regional network applications that are 700/800 MHz compatible and benefit multiple users in all disciplines including local, tribal, state, and non-governmental organizations. Federal users must be, and will be, invited to participate as appropriate in the enhanced regional systems that provide mutually beneficial coverage and services.

Prioritization: High

Time Frame: Medium

Action Plan:

- Successful completion of the Demonstration Project to demonstrate the efficacy of regional enhancements as a statewide interoperability solution
- Assess and identify known areas in need of connectivity to existing systems
- Analyze communications connectivity solutions appropriate to each in-need entity/community
- Determine the willingness of the existing system owner to enable new users on their system as permanent and/or assisting responders
- Proctor the development of agreements between the in-need and providing entities/communities
- Identify and secure required funding streams
- Deploy connectivity solutions to in-need entities/communities
- Assess and report on the effectiveness of the deployed solutions
- Reassess on a statewide level and identify remaining communities in need of connectivity

Critical Milestones:

- Successful completion and evaluation of the Demonstration Project by late 2008
- Expend proposed funding prior to March 31, 2010 for projects funded through the PSIC grant program
- Identify new funding to support requirements beyond those funded through the PSIC initiative
- Identify “other” responders (i.e., federal) that would participate in such system(s)

Metrics:

- Quantitative report on the number of deployed communications solutions
- Quantitative report on the number of MOU/MOAs established among the regional system owners and the participating assisting entities/communities.
- Assessment of the estimated improvement in connectivity and coverage
- Quantitative report on the increase in the number of participating agencies per regional system
- Quantitative report on the reduction in the number of stove-piped local systems
- Qualitative assessment on the increased frequency of use of interoperable communications solutions

Challenges/Hazards:

- Impact of establishing regional and statewide communications governance structures and agreements
- Impact of the ability to secure agreements between communities
- Impact of securing vendor and/or manufacturing support
- Impact of securing and receiving required funding
- Impact of executing the required engineering studies and procuring the required technologies in the proposed time line
- Impact of staffing changes and resource availability

5.4.3. Strategic Initiative #3- Expand Communications Governance Model

Description: As the maturity of operable and interoperable communication increases statewide in Arizona, the existing governance structure will also need to mature accordingly. The governance structure going forward will need to be responsible for the technical "day to day" operations of the new and emerging systems as well as maintain responsibility for the strategic direction pursued in accordance with this SCIP. The ongoing maturation process of statewide communications in Arizona specifically calls for a governing body tasked with making funding and procurement decisions including the system(s) life cycle management to ensure timely system upgrades and replacement. Therefore, the existing governance structure needs to be enhanced with the appropriate authority, participation, and local and state support.

Prioritization: High

Time Frame: Short

Action Plan:

- Create a PSCC governance committee, chaired by the PSCC Chairman prior to the end of the first quarter 2008.
- Task the PSCC governance committee with creating a "straw-man" governance model.
- Solicit input to the proposed governance model from all appropriate stakeholders
- Incorporate input and develop a finalized governance model
- Obtain PSCC approval on the final governance model
- Solicit and obtain legislative approval for the final proposed PSCC governance committee model

Critical Milestones:

- Establishment of the PSCC governance committee
- Completion of the PSCC governance committee model draft for approval
- Approval of the governance model draft by the PSCC
- Legislative approval of proposed changes to the PSCC authority that would enable enactment of the PSCC governance model

Metrics:

- Acceptance and establishment of the completed PSCC governance model

Challenges/Hazards:

- Impact of failing to reach a consensus on the proposed governance model
- Impact of failing to obtain PSCC approval on the draft model
- Impact of failing to obtain legislative approval on the PSCC authority modifications

5.4.4. Strategic Initiative #4 – Upgrade the Statewide Microwave Backbone Infrastructure

Description: The Department of Public Safety will continue to upgrade the state microwave system from its current obsolete analog technology to state-of-the-art digital technology. Each of the more than 80 links requires replacing, with only a handful already completed. The upgrade will provide the communications capacity needed for current and planned public safety communications systems that will allow voice, data, and video sharing capabilities. Additionally, many repair parts for the current analog system are not available or very difficult to locate thus allowing the current system to be more susceptible to failure.

Prioritization: High

Time Frame: Long

Action Plan:

- Obtain Federal Communications Commission frequencies and Licenses (new or modified) to allow operation of the new digital microwave
- Acquisition of a quantity of digital microwave and ancillary equipment
- Schedule and perform antenna installations
- Schedule and perform microwave terminal installations
- Optimize route
- Test both ends of each link
- Test end to end through the whole system
- Connect applications and systems
- Upgrade existing sites as necessary to accommodate the new/upgraded equipment

Critical Milestones:

- Purchase order
- Delivery and availability of the required equipment
- Scheduling Installation with current personnel, additional personnel, and weather unknowns

Metrics:

- Issue contract for equipment acquisition, site upgrades, and installation
- End-to-end operational and acceptance testing

Challenges/Hazards:

- Impact of staffing changes and resource availability
- Impact of seasonal weather issues that could impact deployment of AIRS suites

5.4.5. Strategic Initiative #5 – Develop a Comprehensive Plan to Address Catastrophic Communications Loss

Description: In the event of a catastrophic loss of communications, there should be a plan in place to restore communications for the continuity of government and public safety communications. The technology used should be redundant, ensure that there are no single points of failure, and include multiple technologies.

Prioritization: High

Time Frame: Short

Action Plan:

- Review the statewide Strategic Technology Reserve
- Identify areas where technology reserves need augmentation
- Augment the reserve with technologies that would include 800 MHz public safety radios, satellite phones, short-range wireless radio telephones, and portable local and wide area networks to ensure communications between communications assets
- Pre-position satellite phones and radios to the Governor, her key staff, and cabinet members, as well as make this equipment available to local and tribal government leaders
- Train staff and exercise equipment to ensure staff understands how this equipment can be used
- Reassess the deployment of equipment after exercise program

Critical Milestones:

- Obtaining funds to purchase required equipment
- Purchasing and deploying equipment within the specified timelines

Metrics:

- Quantitative measurement of the populated areas of the state that could be linked via extraordinary communications processes within three hours of catastrophic loss of communications
- Quantitative measurement of incident area surrounding the incident command center that has access to telephone communications Quantitative measurement of placing into affect documented and recommended “hot-wash” improvements

Challenges/Hazards:

- Technology must be purchased and installed within allowable timelines of the PSIC grant funds
- Individuals and agencies must agree to participate in this program and be responsible for the additional equipment
- Individuals and agencies must complete training prior to the release of equipment to them. This may prove to be a challenge for many individuals and jurisdictions
- All agencies and individuals need to participate in the exercises on a regular basis to properly evaluate and improve the program

5.4.6. Strategic Initiative #6 – Develop a Long-Term Funding Strategy

Description: A comprehensive funding strategy is essential to support and implement this SCIP and sustain interoperable communications for Arizona's public safety entities. A dedicated and sustainable funding stream allows planners to appropriately invest in positive communications solutions and make significant impacts toward closing identified communications gaps.

Prioritization: High

Time Frame: Short

Action Plan:

- Identify the current and projected future statewide funding need
- Identify potential funding sources
- Investigate the feasibility of procuring long-term funding (i.e., tax-based, bonds, public/private partnership, etc.)
- Engage in outreach programs to bring awareness of the funding need to the appropriate funding entities
- Participate in any/all appropriate grant application programs
- Develop state budget initiatives
- Garner stakeholder input to proposed budget initiatives
- Develop project investment justifications as required
- Garner approval (by ITAC or GITA as required by statute) of the PIJ
- Secure identified funding
- Allocate procured funding to approved PIJs

Critical Milestones:

- Meet all grant program application deadlines
- Meet all budget submission deadlines
- Meet all state legislative meeting cycles
- Obtain ITAC and GITA approval as required by statute for proposed PIJs

Metrics:

- Quantitative assessment of additional dollars secured for statewide communications initiatives
- Quantitative assessment of PIJs funded with secured funding

Challenges/Hazards:

- Impact of a budget shortfall
- Impact of denied grant submissions
- Impact of the overall statewide economy and other funding priorities
- Impact of a lack of political and/or public support for funding strategies
- Impact of an incident of national significance that raises the level of concern regarding funding interoperable communications-related initiatives

5.4.7. Strategic Initiative #7 – Develop a Statewide Communications Migration Plan

Description: Arizona is developing a statewide communications plan that includes updating of a statewide microwave system, state agency migration and local, tribal, and federal connectivity to a 700 MHz Project-25 radio systems. Additionally, local, tribal, and federal agencies will be given the option to join this new radio system as it is deployed in their area. As this takes place, the state must create a migration plan for themselves and others (who may wish to join them on this new radio system). The migration plan may or may not be a one-time change in technology, and is dependent on the current technology deployed by an entity, and current connection to the state system, if any.

Prioritization: Medium

Time Frame: Medium

Action Plan:

- Assess and identify agencies and/or communities that need or want to migrate to other existing or planned systems
- Identify existing systems capable of absorbing new users
- Document the known life spans of existing legacy systems
- Prioritize agencies/communities most in need of migration to shared systems
- Develop a phased migration timeline that allows existing systems to live out their useful life and moves agencies/communities to existing/proposed systems systematically
- Proctor the development of agreements between agencies sharing systems
- Identify funding streams required to migrate users to new systems
- Expand existing limited systems to increase their capacity and coverage for new users
- Complete implementation of the planned 700/800 MHz statewide communications system
- Initiate the prioritized migration timeline by migrating a selected number of test cases
- Assess the effectiveness of the test case migrations
- Apply best practices and lessons learned from the test case migrations to future migrations on the prioritized migration timeline
- Develop a recovery plan to address surplus legacy equipment, spectra, etc
- Develop a long-term plan to address users who do not need or want to migrate to shared systems

Critical Milestones:

- Develop a costing model to join the statewide radio system
- Develop a governance model that will ensure a local or tribal entities voice is heard and their needs are met as best they can in the statewide radio system
- Meet with local and tribal entities in advance of build out to ensure they are aware of the business proposition and economies of joining the statewide radio system
- Develop engineering study in advance of connections outlining requirements and steps required for migration for all parties.

Metrics:

- Quantitative results of entities migrating to the statewide radio system
- Quantitative improvement in the overall footprint of interoperable communications in Arizona

Challenges/Hazards:

- This is politically sensitive and must be managed carefully
- This will require experienced engineering to ensure no loss of service during migration
- To the extent possible, pre-planning for network capacity is important
- Impact of competition between state and local systems for subscriber communities participation

5.4.8. Strategic Initiative #8 – Develop the PSCC Long-Term Solution – High-Level Network Connections Component

Description: The statewide system is planned as the ultimate approach to interoperability among all public safety entities in the state. The planned system is an open standards, compliant (Project-25, Telecommunication Industry Association-102) 700 MHz trunked radio system. It will have enough capacity for state agencies and many smaller local agencies. It can be expanded in capacity to serve additional agencies and extended to cover additional land areas. It will have high level network connections to allow other radio systems to be interconnected to the statewide system.

Prioritization: High

Time Frame: Long

Action Plan:

- Establish governance (see Initiative # 3)
- Complete conceptual design
- Finalize project budget
- Identify and obtain commitments for funding
- Issue Requests for Proposals (RFPs)
- Evaluate proposals and select a system supplier
- Perform detailed engineering
- Schedule installation phases
- Manufacture, stage, install, test in phases, including:
    - Manufacture and factory stage equipment
    - Test staged equipment
    - Schedule and install equipment
    - Test installations
    - Test system acceptance

Critical Milestones:

- Establish governance (see Initiative # 3)
- Identify and obtain commitments for funding
- Issue Requests for Proposals (RFPs) and select a system supplier
- Manufacture, stage, install, test in phases

Metrics:

- Radio coverage in the anticipated area for each phase
- Acceptance tests passing
- Systems interoperating through the high level interfaces
- Agencies using the new system

Challenges/Hazards:

- Governance
- Funding
- Microwave upgrade completed before each phase (see Initiative # 4)
- Scheduling installations

5.4.9. Strategic Initiative #9 – Develop a Statewide Communications Plan Addressing Mass Transit, Transportation, and Ports

Description: In the event of a major incident, the need to communicate with mass transit, transportation, and ports becomes critical for evacuation of areas of the state. Currently, Arizona has three major airports, limited intercity bus transportation, and limited train transportation. For the most part, incident evacuation is seen as a requirement of local governments and the state would typically use whatever facilities local governments have available.

Prioritization: Medium

Time Frame: Short

Action Plan:

- Create a Mass Transit, Ports, and Transportation Committee by the end of the second quarter 2008. The Chair of the PSCC will appoint the chair of this committee
- Task the committee with developing a "straw man" Mass Transit, Ports, and Transportation plan within one year of creation of the committee
  - Solicit information from local governments – plans that are in place
    - Include Phoenix UASI Transit Plan as a model for the PSCC plan
  - Solicit information from the Arizona Department of Transportation
  - Solicit information, input, and representation by the TSA
- Develop final report for the PSCC approval
- Report will be forwarded to DEMA with a recommendation that it be made part of the statewide emergency response plan

Critical Milestones:

- Establishment of the Mass Transit, Ports, and Transportation Committee
- Completion of the plan for approval by the PSCC
- Including this plan as part of the statewide emergency response plan

Metrics:

- Acceptance of the plan by the PSCC
- DEMA agreeing to incorporate the plan into the emergency response plan.

Challenges/Hazards:

- There is limited mass transit, and only one port in Arizona.
- Impact of not being able to reach a consensus on a plan
- Failure to have the PSCC approve plan.
- Failure to have DEMA incorporating plan into their emergency response plan

5.4.10. Strategic Initiative #10 – Develop a Statewide Comprehensive Communications Training and Exercise Plan

Description: Although the state has an extensive training plan, they do not offer specific NIMS-required communications plans. Specifically, COML and COMT are not offered by DEMA, rather they are taught by the State Fire Chief's Association. As DEMA is responsible for all training for state and local government, and responsible for ensuring NIMS-compliance, it is clear that these classes should be included in the DEMA curriculum.

Prioritization: Medium

Time Frame: Medium

Action Plan:

- By January 2008, the SIEC Technical Committee will form a committee to start working to develop the COML and COMT classes
- SIEC will research requirements of the COML and COMT classes tailored for Arizona
- The SIEC Technical Committee will test curriculum with membership from the Arizona Fire Chief's Association
- Core class and curriculum will be approved by the SIEC and PSCC
- SIEC and PSCC will assist DEMA in obtaining funding to teach this class
- DEMA will make COML and COMT part of their core curriculum
- Upon completion of a class, DEMA will credential communications staff

Critical Milestones:

- January 2008, SIEC Technical Committee will form committee
- Curriculum will be approved by the SIEC
- Curriculum will be approved by DEMA
- DEMA will include COML and COMT as part of their core classes.
- Funding of COML and COMT

Metrics:

- Funding the COML and COMT classes
- Number of people taking and completing the COML and COMT classes

Challenges/Hazards:

- Not getting funding for these classes

5.4.11. Strategic Initiative #11 – Develop a Plan for Statewide Data Interoperability

Description: Most agencies in Arizona have communications systems that interconnect computers at their fixed facilities. Many agencies also have mobile computer data systems, allowing personnel to have data access capabilities in the field. Except for a very few agencies sharing the DPS mobile data system, data communications interoperability is mostly unknown. The need for data interoperability is also unknown and has not been studied. This initiative will determine data interoperability needs and move the state to fill the needs that are found.

Prioritization: Medium

Time Frame: Long

Action Plan:

- Determine lead agency or committee
- Commission a study, whether by consultant or internally
- Approve of the findings of the study
- Determine a plan to meet the needs
    - Later versions of the SCIP will include the action plan determined in this process

Critical Milestones:

- For the first stage of determining need, the needs assessment study will set the pace of the project.

Metrics:

- Deliverable of Data Interoperability study
- Develop a plan

Challenges/Hazards:

- Finding a lead agency/committee to champion data interoperability
- Find funding sources for the study

5.4.12. Strategic Initiative #12 – Standardize SOPs for Statewide Interoperable Communications Solutions

Description: Statewide interoperable communications solutions will require standardized SOPs in order to assure user conformity, ease of administration, and user realization of the highest level of interoperability. The PSCC will therefore leverage member input toward the development of SOPs specifically pertinent to region-wide or statewide interoperable communications solutions such as AIRS, STR equipment, NPSPAC mutual aid frequencies, etc.

Prioritization: Low

Time Frame: Medium

Action Plan:

- Form a PSCC SOP development subcommittee
- Identify subcommittee membership and task the membership with developing statewide communications SOPs
- Gather and assess the utility of existing statewide communications SOPs
- Review existing SOPs for NIMS compliance
- Develop draft template SOPs for each identified key statewide interoperable communications solution
- Post and circulate draft template SOPs for additional stakeholder input/comments
- Submit draft template SOPs to the PSCC and SIEC for approval
- Develop a timeline to refresh and distribute approved SOPs
- Develop a recommended training program for familiarizing users with approved SOPs
- Incorporate updated communications SOPs into planned training, exercise, and planned event opportunities
- Assess the outcome of these training and planned events
- Revise the SOPs on an annual or as needed basis

Critical Milestones:

- Create committee for SOPs, committee will include those who currently have statewide radio systems, and larger regional systems
- Review body of information available in the state for interoperability solutions, AIRS, Emergency Medical Services, etc,
- Create “strawman” SOP and vet to the community of interest
- Input from community of input included in subsequent drafts

- Sent to PSCC for approval

Metrics:

- Creation of a standardized SOP that can be used statewide
- Number of agencies who agree and sign SOP
- Number of agencies that use the standardized SOP

Challenges/Hazards:

- PSCC will not approve standardized SOP
- Agencies will not abide by a standardized SOP

5.4.13. Strategic Initiative #13 – Develop an Interstate Interoperability Plan

Description: Interoperability within a state is a challenge because of spectrum, jurisdictional boundaries, and funding mechanisms. This challenge is magnified significantly when states attempt to cross one another's boundaries. Most often, it is counties needing to communicate with other counties across state boundaries, so if a conflagration crosses a county or state boundary, there is a need to communicate. No matter who needs to communicate, there are two issues: technology and governance/jurisdiction. Technology is reasonably simple, as it may be remedied by switching to another frequency on a radio, or as complex as creating a console patch, or use of some sort of gateway. The more difficult issue is that of jurisdiction or governance. Often it is a question of "who can talk with who, under what circumstances, and how." This initiative is important because it informs the way that state agencies will communicate with each other in times of emergency. As crises cross state lines, communications bridging states should be part of a communication plan.

Prioritization: Low

Time Frame: Long

Action Plan:

- Determine if DEMA has an interstate communications interoperability strategy
- Crossing of state boundaries becoming an interstate action coordination and partnership with the federal entities needs to be considered/determined
- If not, the PSCC will create a committee to work on this issue by July 2008.
- The committee will conduct an investigation with regard to bordering states to determine the technology they have deployed. The committee may chose to use CASM to help in determining this information
- Fund this plan (if necessary) for travel reimbursement
- The committee will create a report to the PSCC for approval
- Upon approval, the PSCC will forward this report/plan to DEMA.
    - DEMA will include this plan in their emergency response plan

Critical Milestones:

- Creation of an interstate communications interoperability committee by July 2008
- Create a report and plan for PSCC approval
- Forward report and plan to DEMA

Metrics:

- Quantify states participating in the interstate interoperability strategy
- Plan included as part of state emergency response plan

Challenges/Hazards:

- Other states may not wish to participate in this program
- This may require travel reimbursement – failure to travel to other states may put this process is jeopardy.
- Plan may not be approved by PSCC
- Plan may not be adopted by DEMA

5.4.14. Strategic Initiative #14 – Improve Cooperation with and the Integration of Tribal Entities into Interoperable Communications Functions

Description: Thus far, interest from the tribal communities concerning the interoperability projects has been lack luster. It is believed that, as the plans for development of the statewide system become more firm, that tribal agencies will consider the new system as a platform to improve their own systems. In addition, as interoperability plans mature and systems such as AIRS gain success; tribal agencies will become interested in the other state systems and in interoperability. The state must continue reaching out to the tribes and educating them to develop the desire to participate.

Prioritization: Medium

Time Frame: Long

Action Plan:

- Continue to keep all tribal nations on the email notification lists
- PSCC and ADEM continues to provide opportunities to tribes
- Educational "road shows" specially designed for the tribal nations will be developed to demonstrate the need for the interoperability
- Formulate a plan to provide interoperability with tribes, on a tribe-by-tribe basis
- Become engaged in the annual Tribal Communications Conference so that ideas and cooperation can be exchanged and nurtured

Critical Milestones:

- Hold periodic workshops with tribal personnel to explore ways of interoperability

Metrics:

- Develop and deliver a plan for each tribe
- Degree of involvement with the annual Tribal Communications Conference

Challenges/Hazards:

- Creating an interest in the Tribal communities to interoperable with other agencies
- Interference with tribal and local relationships may hindering tribal participation in large regional radio systems

5.4.15. Strategic Initiative #15 – Develop an Interoperable Communications Strategy with Mexico

Description: Emergency operations occurring near the border between Arizona and Mexico may require mutual aid efforts by parties from both sides of the border to intercommunicate. Political (treaties), language, and technology hinder international interoperability. The two states must develop an understanding of each other's practices and systems and jointly determine a means of interoperability.

Prioritization: Low

Time Frame: Long

Action Plan:

- Identify key personnel from both sides of the border
- Determine the necessary treaties and required steps for cross-border operations
- Establish workshops to learn of each others' techniques
- Engage the U.S. Departments of State and Homeland Security to assist in developing cross border communications
- Determine a plan to identify and bridge the interoperability gap(s)
- Carry out the plan

Critical Milestones:

- Determine the necessary treaties and required steps for cross-border operations
- Establish workshops to learn of each other's techniques
- Obtain regular briefings from the federal entities already engaged in cross border communications and provide them with local advances concerning this matter
- Determine a plan to identify and bridge the interoperability gap(s)

Metrics:

- Complete the state's participation in the "Cross-Border" communications plan detailed out by the federal departments in cooperation with the Mexican officials

Challenges/Hazards:

- Determining key personnel and establishing the workshops
- Coordinating set timelines between the federal entities and the state
- Enforcement of any agreements that the U.S. makes with their Mexico counterparts across the entire common border area

5.5. National Incident Management System (NIMS) Compliance

On February 28, 2003, the President of the United States issued Homeland Security Presidential Directive (HSPD)-5, which directs the Secretary of Homeland Security to develop and administer NIMS. NIMS identifies many of the goals and objectives of a common interoperable communications network, mainly a clear and common understanding to improve the delivery of emergency services and incident management.

Arizona embraces the national effort to standardize incident command. By Executive Order 2005-08, the Arizona DHS has oversight responsibilities to ensure state plans are NIMS compliant (see Appendix C). In accordance with the Governor's Executive Order and the Presidential Directive, every jurisdiction in Arizona, either by ordinance or by order of the county executive, has implemented procedures for obtaining and maintaining NIMS- and ICS-compliance. In addition to city/county compliance, Arizona DHS and DEMA continue to assist tribal national and local governments regarding NIMS compliance through regularly scheduled NIMS training courses and outreach programs.

In 2007, DEMA executed a contract for an independent third party audit of each SOP and MOU currently on file. Audit results found full compliance with NIMS at the state and local government level. Pursuant to this audit, all state plans, including this SCIP, follow Presidential Directive HSPD-5 and are designed as NIMS-compliant documents. The PSCC will ensure that all future revisions and updates to the SCIP realize NIMS and NRP compliance in their structure and application. NIMS compliance will also be assessed as a funding criterion for any future SCIP-related purchases or investments.

5.5.1. State Plan NIMS-Compliant

The state plan is NIMS-compliant and conforms to the National Response Plan. By Executive Order 2005-08, included in Appendix C of this SCIP, the Arizona DHS has oversight responsibilities to ensure state plans are NIMS compliant. Arizona DHS is a significant contributing agency for this plan. As Arizona's 700 MHz interoperable radio system is built, participating emergency responders will be able to communicate when required to do so. Part of the state plan is to create an SOP that will include ICS and NIMS communications requirements and those that are required under the National Response Plan. Until the state has implemented the 700 MHz radio system, the state will continue to use AIRS. Once fully deployed, the AIRS system enables an on-scene ICS that may be used by an Incident Commander (IC) to deploy their assets when and where they are needed. The IC then communicates with other commanders, who in turn use their own radios to deploy their resources. The new 700 MHz network and the existing AIRS allows an Incident Commander to assign ICS roles and duties to incoming responders, as defined by NIMS, without concern for the individual agency's communications frequencies.

5.5.2. Current Level of NIMS Compliance at All Levels of the State

In accordance with the Governor's Executive Order and the Presidential Directive, every jurisdiction in Arizona, either by ordinance or by order of the county executive, has become NIMS- and ICS-compliant.

5.5.3. NIMS Requirements for Local Jurisdictions

As specified in 5.5.2, all jurisdictions are NIMS-compliant. The Executive Order directs the Arizona DHS and DEMA to:

- Incorporate NIMS into existing statewide training programs and exercises
- Institutionalize NIMS
- Provide and coordinate technical assistance to localities to ensure NIMS compliance
- Lead the effort to insure statewide NIMS compliance

5.5.4. Support and Leadership Provided to Tribal and Local Entities

Arizona DHS and DEMA provided and continue to provide all needed support and leadership to assist tribal national and local governments regarding NIMS compliance. To assist agencies in their compliance, DEMA regularly schedules NIMS training. Additionally, DEMA has outreach personnel who go to local and tribal entities to invite them to classes.

5.5.5. PSIC-Funded Equipment Enables NIMS-Compliance

The state, local, and tribal governments will only submit requests for PSIC funds for equipment enabling NIMS compliance. For example, the state will submit an investment justification for the following technologies, each enabling the statewide interoperable communications system:

- Microwave enhancements – From analog to digital, in three phases, to be completed in 2013- This will serve as the statewide radio systems backbone.
- Statewide build-out of the Project-25 700 MHz Radio System – This will assist local governments who have equipment that could work in this spectrum connect with the state radio systems. As the state radio system will require NIMS compliance, this will therefore support NIMS in the state.
- Assist local governments outside of the state network connect to the state system but will not become part of the statewide network- This will require those who wish to join this network to become NIMS-compliant.

Arizona is making every attempt to assist those not currently fully NIMS-compliant to become so. To assist them, the state offers online classes and as encouragement, the PSCC requires NIMS compliance for each system they oversee.

5.6. Review and Update Process

Recognizing that the statewide interoperability plan is a dynamic, living document, the PSCC has created a review and update process involving the emergency responder community of interest.

5.6.1. Who Chairs the Review and Cycle Schedule

The PSCC Executive Director or his designee, at least once a year starting in August 2008, is tasked with ensuring proper review of the statewide interoperability plan. The frequency of this review may increase depending upon the current interoperable environment assessment and completed strategic initiatives.

5.6.2. Process to Create a Review Committee

The PSCC Executive Director will publish in advance of the next regularly scheduled PSCC meeting an agenda with an agenda item to update the SCIP Plan as part of that agenda. Additionally, the PSCC sends notifications to the emergency responder community of interest advising its members of the upcoming meeting. A call for volunteers will be made to ensure the plan is vetted and reviewed by a representative sample of all jurisdictions and emergency responder disciplines in the state. The transmission letter will advise the recipients of the review's scope to help them understand the breadth of work required.

5.6.3. Appointment of the Review Committee

At the PSCC meeting, the PSCC Chair will receive a recommendations report from the PSCC staff for the review committee. The PSCC Chair shall assign accepted topics for review to the appropriate review committee member(s). The PSCC chair will also appoint a chair of the committee and provide a timeframe for the final report and recommendation to be completed.

5.6.4. Review of the Statewide Interoperability Plan

The Review Committee chair shall hold open public meeting(s) at times and locations accessible by those willing to participate in this review. The Chair will send a notice to all emergency responders, using the same process detailed in Section 5.6.2.

Input to this plan is not to be limited to those appointed to serve on the committee; rather it is open to all who wish to attend and participate in meetings. Additionally, the Committee entertains written responses.

At the conclusion of the review, the Review Committee Chair or their designee shall prepare and present a report to the PSCC Chair including recommended changes to the SCIP. It will also include the opinions of those who made recommendations not entered into the final draft of the amended plan.

This review and its associated report will then be sent to the PSCC Executive Director. The Director will review the plan and make a recommendation to the PSCC Chair.

5.6.5. Recommendations to Amend the Statewide Interoperability Plan

During the next regularly scheduled PSCC meeting, the PSCC Chair will receive the report from the Review Committee Chair and the PSCC Executive Director. During this open meeting, the suggested amendments will be discussed and approved or rejected.

5.6.6. Revised Statewide Communications Interoperability Plan Distribution

After receiving PSCC approval the Revised Statewide Interoperability Communications Plan will be distributed in a manner as outlined in Section 5.6.2 of this plan. The revised plan will include a Change Log that shall be used for a record of the following information:

- Change number
- Date
- Description of change
- Effective date of change
- Signature

5.7. State Leaders and Policy Makers

State leaders and other policy makers are and will continue to be engaged in the administration of the SCIP. The PSCC has therefore acknowledged the importance of statewide leaders continuing to receive education regarding the criticality of interoperable communications and being kept apprised of the ongoing progress toward strategic SCIP initiatives.

The PSCC Support Office is responsible for sending out over 400 email invitations (representing over 80-percent of the state's population) to attend PSCC and SIEC meetings. An additional 600 emails are sent to representatives of the tribal nations in Arizona to keep them informed of the working of the PSCC. The distribution (based on domain name search) includes the agencies in Table 14.

As examples of the dedication of Arizona public officials to public safety interoperability, the Governor has directed the installation of functional interoperable communications within two years covering 85-percent of the state population. The Governor further expressed a desire to have the statewide land mobile radio system implemented within four years. Additionally, directors of state departments, local government, tribal governments, and non-governmental agencies have been engaged in the operation of the PSCC and the creation of this SCIP. County, federal, tribal, and municipal leaders serve on each of the five RACs and recommend the use of PSIC and other funds within their regions.

5.7.1. Education of Policy Makers

Policy makers have been involved in the development of the SCIP and are acutely interested in the plans and actions that will enable their jurisdictions to achieve communications interoperability. As strategies are refined and executed, PSCC representatives will inform these leaders of the plans and progress achieved to date as well as provide awareness briefings as to how these initiatives relate to each leader and their jurisdiction. In addition to educational outreach, public official participation in this effort includes

- Participation in committees – The members of the PSCC, SIEC, and RACs include state, federal, tribal, and local leaders. These leaders influence and support the execution of the SCIP objectives and other initiatives that enhance interoperability statewide
- Representation in committees – Those members of the PSCC, SIEC, and RACs who are not policy makers serve on these committees at the behest of their jurisdictions' or their community of interest. These members bring reports and updates to their policy makers and organizations to ensure leadership visibility to the work and progress of these important committees
- Meeting minutes – The minutes of all PSCC and SIEC meetings are posted on appropriate websites, and distributed widely to local and state leaders, keeping them informed of decisions and status reports made in the meetings
- Newsletter – The PSCC issues a newsletter periodically describing the progress of the work toward interoperability. Statewide public official leadership is included in the mailing list of this publication
- Personal contact – The PSCC Executive Director visits with policy makers and updates them on the progress of the Commission and other actions. Additionally, the PSCC will be working on formal outreach programs that will further the reach of the PSCC, SIEC, and RACs
- Open meetings – The PSCC, SIEC, and RAC meetings are widely publicized and open to the public. The PSCC and SIEC maintain an email distribution list of over 400 names and organizations. Governmental leaders are welcomed to attend

5.7.2. Progress Reporting to Policy Makers

The policy makers must be kept apprised of the progress and success of implementing the initiatives through reports indicating performance measures. The reports are disseminated using the above listed methods and other ways yet to be determined.

The performance metrics are outlined in Sections 5.3, 5.4 and 6.0-6.1.4 of this report, and will be continually refined as the projects and actions are developed.

6. IMPLEMENTATION

The PSCC has been active in leading the state's efforts toward improved emergency communications interoperability. Previous state-sponsored studies have resulted in real progress and interoperable systems continue to be implemented and have been credited with assisting agencies in high profile multi-agency operations. Plans include establishing common first responder channels (e.g., NPSPAC, mutual aid, etc.) to be incorporated statewide for application during emergency response and disaster relief. Initiation of common channel nomenclature along with the subject mutual aid channels will be incorporated as systems narrowband and upgrade to complement the statewide radio system.

6.1. IMPLEMENTATION AND MIGRATION

The migration path for the state is two-fold. The first step, as outlined in the Demonstration Project planned for 2008, will have the state migrate to an existing infrastructure owned and operated by local governments. In areas where there is no infrastructure to support the 700 MHz statewide radio system, the state will build one, and invite others to join. In areas where the state joins a local government's infrastructure, the state may become a "broker" for smaller jurisdictions to join with the state in support of a larger regional system. In both examples, the implementation of a coordinated, interoperable radio system will be the result.

6.1.1. SHORT- AND LONG-TERM IMPLEMENTATION

Interoperability cannot be achieved by mandate or immediately. Thus, many of the plans of the SCIP have both short- and long-term components. Sections 5.3 and 5.4 of the SCIP describe many such plans, goals, and initiatives. In this section, we examine several critical plans that may start immediately and continue throughout the duration of this project. For the purposes of this section, we measure project duration to determine if it is short- or long-term. For example, the statewide microwave system is being updated, and that process will be ongoing until at least 2013. Although it started in the short-term, because of the duration of the project, we will consider that a long-term project. Examples of these projects are listed below.

6.1.1.1. MODERN REGIONAL SYSTEM ENHANCEMENTS

It is incumbent upon the local jurisdictions to enhance their regional networks as they are able to do so. In some cases, enhancing these networks can be done immediately, yet in other cases, it will take many years until the network is mature enough to warrant enhancements. The state recognizes the importance of these networks and will support enhancement where possible and when appropriate. These modern enhancements will make up the bulk of the funding request that Arizona will make because of the PSIC grants. They enable local and tribal entities to enhance their radio systems while ensuring connectivity with the state when the state is ready to accept their connections. Section 5.4.2 of this SCIP outlines many of the modern regional systems enhancements that are typical of those that fall within this category

Ongoing Regional Enhancements	
Task	**Time**
Regional enhancements are ongoing (please refer to Sections 5.3-5.4 of this SCIP	2004- ongoing
Phoenix metropolitan high site project	2007-2009
State of Arizona Demonstration Project system subscribers	2007-2009
Begin work on other Regional Enhancements	2007-2009
Create contracts for purchase orders for subscriber units	2007-2009
Program subscriber units into appropriate radio systems	2007-2009
Regional enhancements will continue for the life of the system	2007- ongoing

Table 38 - ONGOING REGIONAL ENHANCEMENTS – SHORT AND LONG-TERM IMPLEMENTATION

6.1.1.2. State Microwave Backbone Infrastructure

Ongoing statewide – The Arizona DPS has been upgrading the statewide microwave system. This project is ongoing and is expected to continue until 2013.

Microwave Infrastructure Implementation	
Task	**Time**
Microwave infrastructure (please refer to Sections 5.3.- 5.4 of this SCIP)	2007-2013
Arizona Department of Public Safety microwave replacement.	2007-2013
Local Governments work with AZDPS on state microwave replacement requirements	2007-2009
Local governments order necessary equipment for microwave sites in concert with AZDPS	2007-2009
AZDPS working with Local Governments install digital microwave links	2007-2009

Table 39 - STATEWIDE MICROWAVE INFRASTRUCTURE – SHORT AND LONG-TERM IMPLEMENTATION

6.1.2. Short-term Implementation

6.1.2.1. AIRS

The implementation of the AIRS system began in early 2006 and continues today according to plans developed in 2004 and 2005. AIRS is called a short-term solution because it will be completely installed and useable within three years. Because there is no end date envisioned for AIRS, the implementation lasts for many years into the future. Within the next two years, AIRS will be fully deployed using a combination of existing Homeland Security funds and dedicated funds from the state. The stages of this implementation are shown in Table 40.

AIRS Implementation	
Task	**Time**
AIRS implementation and design, Engineering, Planning – Plan was created by the PSCC. As discussed in Section 4.7.7.1 this report, AIRS was to become a rudimentary interoperability system for the state of Arizona.	2004-2005
Installation begins – funded in part by grants from the Department of Homeland Security and in part from general funds.	March 2006
Implementation of 40 AIRS suites complete. Based upon original plans, AIRS will be completed based upon original designs.	June 2008
Implementation of dispatch center components completed, enabling the 3 DPS dispatch centers to monitor and control AIRS.	June 2009
Installation of AIRS in subscriber units will continue, allowing AIRS to be installed in every state public safety vehicle.	2005-ongoing
Integration of AIRS with the statewide radio system will provide all of the necessary interfaces with the 700 MHz statewide radio system.	2012

Table 40 - AIRS IMPLEMENTATION – SHORT-TERM IMPLEMENTATION

6.1.3. LONG-TERM IMPLEMENTATION –700 MHZ RADIO SYSTEM

Leadership toward improved interoperability can be credited to the individual agencies that formed the *ad hoc* committee that became the PSCC. Thereafter, the leadership of the PSCC as authorized by the Governor and State Legislature has carried interoperability further on the road to the statewide common infrastructure system as proposed today.

Implementation of the Goals and Objectives (Section 5.3) and Strategic Initiatives (Section 5.4) is estimated to progress according the following schedule.[27]

6.1.3.1. GOVERNANCE

Governance is the process by which decisions are made. It also ensures all participants in any radio system have a voice in the decision making process and ensures their investments and mission-specific interests are preserved. The process that started in 2001 will continue throughout the life of the statewide radio system. A list of governance tasks is provided in Table 41.

[27] As the long-term plans for the statewide 700 MHz system go from the design to the implementation phase, milestones, specific deliverable dates, and critical paths will be included in the program management documents presented at a future date.

Governance	
Task	**Time**
Governance of statewide interoperability started with the inception of the PSCC.	2001
PSCC established officially	2004
PSCC and other state sponsored consultant studies (see Section 1.0).	2004-2007
PSCC establishes AIRS MOU (see Section 4.3.7).	2005
Agencies agreeing to AIRS MOU (private and public agencies) (see link to the MOU in Section 4.3.7).	2005-ongoing
PSCC Demonstration Project planning and coordination – the PSCC developed a concept for a system of systems approach and developed a plan to demonstrate the concepts. The PSCC Commission and state IT committee approved the plan, with implementation to begin first quarter of 2008.	2007-2008
PSCC-Phoenix-Mesa and PSCC-Yuma Demonstration MOU – MOU conditions being resolved during November, 2007, to January, 2008.	2007
PSCC governance model planning – PSCC has been gathering governance model ideas since June 2006. They expect to pass a governance plan by January 2010.	2006-2010
PSCC statewide system governance committee(s) established – following the model developed above.	2010
Determine funding sources and secure funding - The PSCC will identify state and federal funds needed to establish governance and fund the 700 MHz system.	2008-ongoing
Completion of interstate procedures and systems – the PSCC will open talks with neighboring states to determine interoperability across state lines.	2008-ongoing

Table 41 - GOVERNANCE – LONG-TERM IMPLEMENTATION

6.1.3.2. PLANNING

Planning incorporates all of the concerns and processes that the PSCC used in order to recommend the system of systems approach for a statewide system. It includes the 700 MHz statewide radio system that state agencies require, and local, tribal and federal entities may join, the mechanisms that enable a high-level network connection to the statewide system, the use of AIRS and the use of the statewide microwave as the “glue” required to hold these systems together.

Planning Implementation	
Task	**Date**
Planning is a major role of the PSCC and included other state sponsored consultant studies	2004-2007
PSCC planning and design of AIRS – Plan was created by the PSCC. As discussed in Section 4.5.4 of this report, AIRS was to become a rudimentary interoperability system for the state of Arizona.	2005-2010
PSCC planning and design of statewide system – Consultant retained in July, 2007, and engineering design will continue until full implementation and testing are complete.	2006-2013
PSCC Demonstration Project planning and coordination-- the PSCC developed a concept for a system of systems approach and developed a plan to demonstrate the concepts. The PSCC Commission and state IT committee approved the plan, with implementation to begin first quarter of 2008.	2007-2008
PSCC planning of training for technicians & system managers – The first technician training will occur as part of the Demonstration Project during 2008, and other training will continue until completion.	2007-2012
PSCC planning of training for users – System users will be trained in AIRS as an on-going activity. Users of the 700 system will receive training well before cutover. Additional training may occur if users begin migration to regional systems.	2010-2013
PSCC governance model planning– PSCC has been gathering governance model ideas since June 2006. They expect to pass a governance plan by January 2010.	2006-2010
PSCC statewide system testing planning – acceptance test plans will begin shortly after award of the contract for system purchase.	2008-2013
PSCC planning for cutover of and migration to statewide system – Cutover plans are critical and will be developed by the PSCC, consultant, system vendor, and the governance committee long before the first cutover of system components, approximately during 2009.	2008-2013

Table 42 - PLANNING – LONG-TERM IMPLEMENTATION

6.1.3.3. TECHNOLOGY

As stated previously, the technology that is being deployed by the state is a result of years of deliberate planning. Tables 43 through 46 identify technologies that will be deployed and the necessary steps and anticipated dates for implementation.

AIRS	
Task	**Date**
AIRS design, engineering, planning – Plan was created by the PSCC. As discussed in Section 4.5.4 of this report, AIRS was to become a rudimentary interoperability system for the state of Arizona.	2004-2005
Installation begins – funded in part by grants from the Department of Homeland Security and in part from general funds.	March 2006
Implementation of 40 AIRS suites complete. Based upon original plans, AIRS will be completed based upon original designs.	June 2008
Implementation of dispatch center components completed, enabling the 3 DPS dispatch centers to monitor and control AIRS	June 2009
Installation of AIRS in subscriber units will continue, allowing AIRS installation in every state public safety vehicle.	2005-ongoing

Table 43 - AIRS DESIGN AND ENGINEERING – SHORT-TERM IMPLEMENTATION

Microwave	
Task	**Date**
DPS engineering of microwave system upgrade – The replacing of existing analog system has been studied by the Department of Public Safety since 2001. Engineering on system will continue on a link-by-link basis until completion.	2001-2012
DPS installation of digital microwave components - Installation began on the most heavily used routes between major population centers and will continue until completed. All work is performed by the Department of Public Safety Wireless Systems Bureau.	2004-2013
PSCC planning and design of statewide system – Consultant retained in July 2007, and engineering design will continue until full implementation and testing are complete.	2006-2013
PSCC determination of statewide architecture – A workshop in April of 2007 developed a plan for the system architecture. The PSCC Commission approved the approach in May 2007.	2007

Table 44 - STATEWIDE DIGITAL MICROWAVE SYSTEM – LONG-TERM IMPLEMENTATION

700M Hz Statewide System	
Task	**Date**
700 MHZ PSCC Demonstration Project planning and coordination – the PSCC developed a concept for a system of systems approach and developed a plan to demonstrate the concepts. The PSCC Commission and state IT committee approved the plan, with implementation to begin first quarter of 2008.	2007-2008
PSCC-Phoenix-Mesa and PSCC-Yuma Demonstration MOU – MOU conditions being resolved during November, 2007, to January, 2008	2007
PSCC-Phoenix/Mesa-Yuma test demo project – Planned for the second and third quarter of 2008, the Demonstration Project will show the system-of-system concepts and governance, with an assessment report due in October 2008.	2008
Statewide system delivery, install, test, cutover – The implementation will occur over a several year period, in phases, to build an overlay of the system statewide. The PSCC and DPS will coordinate vendor activities.	2009-2013
PSCC planning of training for technicians – The first technician training will occur as part of the Demonstration Project during 2008, and other training will continue until completion.	2007-2013
PSCC planning of training for system managers – The first technician training will occur as part of the Demonstration Project during 2008, and other training will continue until completion.	2007-2013
PSCC planning of training for users – System users will be trained in AIRS as an on-going activity. Users of the 700 system will be trained well before cutover. Additional training may occur if users begin migration to regional systems.	2010-2013
Integration of AIRS with the statewide radio system – As the 700 MHz system is installed; AIRS would be interconnected with the 700 MHz system to provide further interoperability. Other established systems on any band can also be integrated into the AIRS network as determined by the governance board.	2013
Statewide system cutover complete – It is planned to be operational on 700 MHz to meet the FCC refarming requirements due January 1, 2013.	2013
Abandoned frequencies relinquished – DPS and other participants in the statewide system will relinquish their no longer used frequencies to the FCC and cancel the appropriate licenses.	2013

Table 45 - 700 MHZ STATEWIDE RADIO SYSTEM – LONG-TERM IMPLEMENTATION

High-Level Network Connections	
Task	**Date**
Determine High-Level network connections needs – The PSCC will guide regional systems in determining what interconnections are needed.	2007-2008
Vendor selected for network connection – Vendors may be selected by the PSCC or participants as necessary. There may be several vendors depending on network configurations.	2008-2009
Training for technicians for technical solution – purchased as part of the solutions, training of technicians will occur prior to system implementation.	2009
Implement connections and interoperability systems – Network interconnections will be installed as soon as possible to create more system-of-systems.	2009
Test connections – End to end testing and complete acceptance testing will occur before the connections are declared complete and ready for use. The agencies implementing the connections will report the results of the tests to the PSCC.	2009
Train users on new network connections – operations and field users will be trained as the connections are implemented.	2009
Exercise system – Training exercises and frequent tests must occur to familiarize the users so the interconnections can be used on a routine basis.	2010
Replicate as required.	2010-ongoing

Table 46 - HIGH-LEVEL NETWORK CONNECTIONS – LONG-TERM IMPLEMENTATION

Notes on the statewide system implementation from the August 2007 Conceptual Design Report:

- Since the radio system will be in a radio band that is currently not occupied, the system can be built on any timeframe decided without the concern for displaced systems or users. Therefore, the entire system could be constructed, and then users migrated to it in a manner suitable to the users. (The alternative in an already occupied band requires users to be migrated from old systems/channels to an interim system/channel and then to the new statewide system. This would require an extreme effort in planning and a substantial expenditure for interim operations.)
- Since the statewide system will be in a band not currently used, a portion of the system could be constructed and users placed on it even before the entire system is placed into operation.
- Old systems can be tied to the new system to allow orderly migration of users without significant impact to their operations.
- Public safety operations must not be affected and communications must not be interrupted during any transition of systems.
- The build-out of the statewide system is dependent on the DPS microwave and site upgrade project.

The recommended sequence for implementation is:

- A number of subscriber mobile and portable units will be selected for system testing
- Repeaters installed where digital microwave and site improvements have been already completed (provides a portion of the system for testing)
- Central controllers (and regional controllers, if needed)
- Inter-system links
- Dispatch centers (with old channels connected to the new consoles)
- Repeaters where early cut-over may be required
- Smaller users connection to the system
- Remainder of the repeaters
- Fill-in repeaters

Estimated installation times must be obtained from vendors and antenna riggers, but a preliminary estimate is as follows:

- Antenna installation – 3 days per site
- Radio install at sites – 2-3 days (assumes fully racked from vendor)
- Radio/microwave interconnection and site testing – 1 day

Therefore, the estimated installation time for is one week per site for implementation.

Console and controller installation time cannot be estimated at this time.

6.1.3.4. TRAINING

Various forms of training shall be utilized dependent on the audience and the type of materials being presented. Internet, direct classroom sessions, customer feedback on system improvements are just a few of the ways in which training will be made into a PSCC outreach initiative.

Training and Education	
Task	**Date**
PSCC education of PSCC commissioners about interoperability – this will be part of the PSCC outreach program conducted by that office.	2004-ongoing
PSCC education of agencies about AIRS & its operation – SIEC will work with PSCC and DEMA to present a comprehensive training program for AIRS. Additionally, funding for this training will be included in this requirement.	2005-2012
PSCC education of agencies and public about statewide system – this is part of the PSCC outreach program conducted by that office.	2006-2013
PSCC planning of training for technicians, managers of system – training will begin via train the trainer program by the manufacturer of the equipment. Thereafter, training will take place on a regular basis.	2007-2012
PSCC planning of training for users – this is for the new radio system. Once trained, ongoing training will be facilitated by the PSCC Support Office.	2010-2013
PSCC training for technicians - As outlined above this will be an ongoing training of the technical staff for the new statewide radio system.	2008-2012
PSCC training for managers of system – this training is more generalized and will include some technical information, but will also include high-level operational training.	2009-2012
PSCC training for users – this will be a train the trainer program originally taught by the manufacturer in consultation with the PSCC. Once completed, this program will be self-generating.	2010-2013

Table 47 - EDUCATION AND TRAINING – LONG-TERM IMPLEMENTATION

6.1.3.5. Replacement Planning

As part of the planning process, the PSCC and other interested parties will start developing plans for a technology replacement or refresh. This ensures that there is a plan in place to update technology as it begins to fail, primarily due to its age.

Replacement Planning	
Task	**Date**
PSCC Replacement life cycle determination – As part of the long-term planning, the PSCC will determine if lifecycle replacement will be included in the statewide plan.	2007-2008
PSCC Replacement cycle plan – If included in the statewide plan, the cycle for replacement will be created. If it is not included, all agencies joining the statewide radio system will be advised to plan for a replacement cost sometime in the future.	2008-2009
Replacement cycle fund establishment by governing board. - Assuming that a replacement cycle will be included; an enterprise fund will be established in the state, to enable the replacement of equipment as it becomes necessary.	2010
First cycle replacement (Demonstration Project and is dependent on cycle plan).	2012
First cycle mobile replacement (Demonstration Project and is dependent on cycle plan).	2013

Table 48 - REPLACEMENT PLANNING – LONG-TERM IMPLEMENTATION

It is estimated that the replacement cycle will be 5-7 years for portables, 6-10 years for mobiles, 15 years for base station equipment and consoles.

6.1.3.6. Short- and Long-term Funding

No plan will be successful that does not address the funding issues. In today's public safety environment where our responders are asked to do more and more with less, we must make sure that every dollar is spent wisely and to the fullest extent possible, meeting the communications needs of our officers and the public they protect and serve. Section 7. addresses this need and the state plan to accomplish certain aspects of funding the goals set within this SCIP.

6.1.4. Critical Factors for success

In any endeavor, having an idea of the final results helps to keep the program centered and allows all to understand what the effort is about. Section 6 of this document outlines a high-level Implemenation Plan that can be used as a preliminary roadmap of critical factors for success of this program. These sections also include a preliminary timeline that could be affixed to this project. It is understood that this SCIP is ever evolving, and dependent upon political will, funding and anticipated progress. Throughout this process, programs will be completed, initiatives will be implemented, and interoperability will continually be enhanced. Nevertheless, new plans, programs, initiatives, subsystems, training, MOUs, SOPs, and other refinements will always be identified and developed. The SCIP will be revised and the new plans will be added.

As with any large program, several critical sub-projects must be completed to ensure its success. These key projects are considered either critical as a stated goal will not be achieved, or the solution is in a critical path that enables other technologies. For example, a stated goal

of the Governor is to have 85% of the state's population covered by interoperable communications systems within two years. This goal will be achieved with the continued deployment of the Demonstration Project and partnering with larger 800 MHz radio systems as the first major steps in achieving this goal.

The following are those projects that are considered critical for the success of the SCIP:

Statewide Microwave System

The microwave system carries information or communications from one area of the state to another. While in and of itself, it does not add to interoperability, it enables it. The state has a three-phase approach of upgrading the microwave system in Arizona. Phase one is underway, but phases two and three are not yet funded. Absent the microwave system upgrade, it is unlikely that any of the systems below will reach their full potential.

AIRS

AIRS provides rudimentary interoperability to any authorized public safety entity that signs a MOU in Arizona. Interoperability with state, local, regional, tribal, and federal agencies are currently taking place in many parts of the state. There are however several areas of the state where this communications system is not deployed. Should the need arise these areas will have communications via the portable AIRS suites proposed by the STR. In some areas of the state, AIRS is not as functional as it could be because of lack of microwave bandwidth. As the microwave system improves, so will AIRS throughout the state. The goal of the SCIP is to have AIRS fully functional by 2009.

Demonstration Project

As part of the eventual 700 MHz statewide project, the Demonstration Project is scheduled to begin operations during the second quarter of 2008. This proof of concept will create a 700/800 MHz system of systems in Phoenix and Yuma, with additional connectivity between those counties and Pima County when their system becomes operational. When this project is completed, interoperable communications, including regional roaming will be enabled in the entire central and southwestern portions of the state. In order to complete the task a portion of the state microwave will need to be improved and a series of high-level network connections maintained between each of the systems being linked.

High-Level Network Connections

As there will be agencies that for their own business reasons will elect not to join the statewide 700 MHz radio system, there must be a way for them to connect to the statewide system. It is for those agencies that a high-level network connection must be created. This connection might be a hard-wired patch, or gateway device, or some other technology, not yet determined. It is important and critical to the success of the statewide system because without this technology, there cannot be a statewide system. Clearly, the desire of the state and the goal of the SCIP is to have a system-of-systems that is only possible by enabling all jurisdictions with the ability to connect to this common infrastructure. The dependencies here are the microwave build out to support the additional radio traffic and the build out of the statewide radio system.

700 MHz statewide system

The direction of the state is to deploy a 700 MHz standards-based statewide radio system connecting state agencies and any local, regional, tribal or federal entity who wish to partner in this project. Clearly, this project will afford all that join this system the ability for system-wide roaming on a state-of-the-art radio system. This system will enable 800 MHz systems to join as they are deployed because the 700/800 MHz spectrums are so closely aligned. Local, regional, tribal, or federal entities along with non-governmental organizations have been part of the planning effort for this statewide system, and it is the desire of the state to create as many partnerships as possible for this new radio system. This radio system has dependencies that include both the Demonstration Project and the improvements to the statewide microwave system. If either of these two projects fails then the statewide 700 MHz project will be in peril.

Governance

Governance is an important factor in all of the interoperability factors outlined above. Governance is the way a group makes decisions. These decisions may be as rudimentary as who may join a system, or how many talk groups will be allowed to an agency joining a statewide system. Governance is critical to the success to each project.

There are many other factors that will be critical for the success of this project, including and certainly not limited to STR in place today and being deployed as a result of the PSIC grant, funding of the system, education of practitioners, decision-makers and partnership opportunities, training both user and technical staff, SOPs, MOUs, etc. Each factor depends on others, as shown in Table 49, Critical Factors for Success Matrix. This matrix indicates the dependencies that each factor has on others to ensure that the SCIP is successful in Arizona.

Critical Factors for Success Matrix											
	Microwave	AIRS	Demonstration	Network Connections	700 MHz	Governance	STR	Funding	Education /partnerships	Training	SOP/MOU
Microwave		X	X	X	X	X	X	X	X	X	X
AIRS	X		X			X		X	X	X	X
Demonstration	X			X	X	X		X	X	X	X
Network Connections			X		X	X	X	X	X	X	X
700 MHz	X		X	X		X		X	X	X	X
Governance		X	X	X	X		X	X	X		X
STR	X					X		X	X	X	X
Funding	X	X	X	X	X	X	X		X		X
Education/partnerships	X	X	X	X	X	X	X	X		X	X
Training	X	X	X	X	X	X	X	X	X		X
MOU/SOP	X	X	X	X	X	X	X	X	X	X	

Table 49 - CRITICAL FACTORS FOR SUCCESS MATRIX

6.1.5. Point of Contact for Implementing This Plan

The information above related to the implementation steps for the new statewide system is important, as it sets an expectation. However, critical to the success of the long-range plan is the establishment of the governing board. The board will champion partnerships between agencies and establish equitable policies. It will also determine future funding needs and financial participation needed for all agencies and will oversee implementation planning. The governing board is one of the most crucial elements in the implementation of interoperability in the state of Arizona. Along with that is the need for the governing board to establish the coordination and partnerships between federal/state/local/tribal agencies whose participation in this overall SCIP is vital to its success and the advancement of communications interoperability with the state of Arizona. Serving as the point of contact for implementing this plan is the Executive Director of the PSCC:

Mr. Curt Knight
Executive Director
Public Safety Communications Commission
Mail Drop 3450
PO Box 6638
Phoenix, Arizona 85005-6638
Telephone: 602.271.7400
Email: *cknight@azdps.gov*

In addition to Mr. Knight, the state plans on creating the position of statewide interoperability coordinator, as outlined in Section 2.9, of this SCIP.

6.1.6. Planning, Coordination, Acquire, Deploy, and Train on Interoperable Equipment

As the state continues to deploy its radio systems a training component will be developed to ensure those using the equipment understand how to use it in the new environment. Additionally, those using this new technology must be trained on its use when they are in areas of the state that have not yet migrated to the new 700 MHz component of Arizona's interoperability solution. Although not all of the details have been completed, it is anticipated that training will include a curriculum approved by the PSCC and taught by DEMA. The vendor will provide the detailed technical training to those who require it.

As important as it is to train those using the equipment it is just as important to ensure that all stakeholders, policy members, and practitioners understand what the current and desired future states of communications are within Arizona. It is for that reason that the PSCC is planning to create an outreach program, with a priority to ensure that all understand where the state is in relationship to its long-term goal, how others can join the statewide movement, and keep policy makers and practitioners alike aware of the steps being taken to improve communications in Arizona.

6.1.6.1. 700 MHz Spectrum Use

The new statewide interoperability system will be a 700 MHz Project-25, standards-based trunked radio system. The use of the 700 MHz spectrum will include all frequencies that can be used for public safety within the state of Arizona. As it is likely that many features of this system will be new to most users, a statewide training program will be developed, as outlined above. Training on the system will be provided in phases and will commence in each region immediately before the new system is deployed and last through the implementation of the region.

6.1.6.2. Interoperability with Others

The PSCC has made its intentions clear that it will not leave any entity behind in its attempts to create a fully interoperable statewide network. To ensure all jurisdictions, disciplines, and required non-governmental organizations (NGOs) are able to communicate with state resources and others on the new 700 MHz radio system, the state will deploy a series of high-level network connections. These connections will enable those who choose not to join the statewide system to communicate with those that are on the system when their missions dictate in real time and on demand. The specifics of these connections are unknown at this time, as the statewide system is still in its design phase.

6.1.7. Strategic Technology Reserve Implementation and Deployment

Arizona currently has a series of five communications vans strategically placed in each of the five RACs. The locations of these vehicles enable them to be called up and on scene generally within three hours. The vans are accessed either by a request to the agency operating the equipment or via a request to the State EOC following the NIMS protocol. Additionally, the state has a number of radio caches deployed using the same mechanism as described above. The current strategic reserve serves the state and needs to be augmented. The Strategic Technology Reserve for this SCIP will consider the continuity of government as its prime directive, with augmenting the current reserves that are deployed throughout Arizona.

6.1.7.1. Satellite Telephones for the Governor, Key Staff and Cabinet

In today's environment, public safety officials have technology affording them the ability to communicate with each other when the need arises. However, in Arizona during times of emergency, the Chief Executive of the state and her key officers and Cabinet do not have a reliable communications system among themselves or between their office and the agencies relying on them for decisions.

Satellite telephones provide the Governor and her staff the ability to communicate with each other and with public safety officials in Arizona should the need arise. This communications is paramount since there is currently no contingency plan that addresses this need. Additionally, even after the statewide radio system is built, should the Governor be out of Arizona, she would lose the ability to communicate with her department heads and other staff if conventional communications means were to become unavailable.

In Arizona, continuity of government is of prime concern during times of emergency. Today, this emergency communications capability does not exist.

Additional satellite phones will be deployed in the emergency communications vehicles. These pre-positioned vehicles will provide additional communications from the scene of an event in more rural areas of the state that do not have cellular communications, or in the event, the cellular communications become overloaded.

6.1.7.2. Cache of Radios to Support Key State, Local, and Tribal Government

Based on experiential data, whenever there is an emergency in the state, the use of the public switched networks (public telephones), the cellular networks, and satellite networks quickly become overloaded. It is during these critical times, that the Governor needs to communicate with her key staff members. This cache of radios will support emergency operations and the continuity of government when other means of communications fail. Additional caches of radios will be provided to local and tribal government officials in support of their continuity of government should the telephone network become overloaded, or if they need to communicate with their team or the Governor in times of crisis. These radios will be pre-

positioned into each of the strategically placed communications vehicles and deployed as needed throughout the state.

6.1.7.3. Cache of Radios in Support of National Stockpile of Pharmaceuticals

Arizona has a cache of pharmaceuticals warehoused in the event of a pandemic. To assist in the distribution of these life-saving medications, a cache of radios are being sought to send to distribution centers to maintain communications with the pharmaceutical centers. As many of these centers do not have communications in place today, this cache will create the communications needed, should this event take place.

6.1.7.4. Deployable Wireless Local Area Network with Cache of Wireless Laptops

Should access to the Internet fail during a time of national emergency, this plan creates a deployable satellite communications link and a cache of wireless laptops that could be deployed. This cache will be pre-positioned in each of the five communications vehicles in the state. These caches would work in concert with the communications vehicles local area networks that can connect to the Internet via the communication van's wireless or satellite link. Additionally, another cache of computers and wireless cards will be positioned at the EOC. This cache of computers and wireless cards will be portable and deployed as needed to any state, local, or tribal entity. It will provide immediate communications until additional communications devices can become available.

6.1.7.5. Wi-Fi Long-Range Cordless Telephone System

This technology enables the continuity of government at a command center environment. It provides instantaneous telephone communications within the command center. With this, each key person can have a cordless telephone that can be used either as an intercom or as a link into the public switched telephone network. Arizona plans to deploy this technology by pre-positioning these instruments within each of the five communications vehicles strategically placed around the state.

6.1.7.6. Portable AIRS Suite

Each of the state's communications vehicles currently includes a cross-band repeater configured in a permanent counted rack. This provides each of the communications vehicles with the ability to interoperate with virtually any technology and spectrum available for public safety. Unfortunately, events do not always happen in areas that will permit a large communications van to drive into the area. Therefore, Arizona plans to purchase five transportable cross-band repeaters that can be deployed to all areas of the state without regard to terrain. These units will be part of the communications vehicles and made available to public safety officials within the state.

6.1.7.7. Remote LAN/WAN Capability

As an emergency evolves, there may be an increased need for local area networks (LANS) or wide area network (WAN) capabilities for emergency responders. The state will deploy portable units that will allow the establishment of a multiple peer-to-peer network (mesh) environment capable of accepting additional responders as they arrive on scene. This will greatly assist the incident commander and the staff with data communications capability with the responding units. At times, during a response, a link to equipment and resources databases is vital to adequately address the emergency. This connectivity will be set up by using units similar in nature to those used during deployment by the Departments of Defense and Homeland Security during emergency responses utilizing their FEMA communications response teams.

6.1.8. Local and Tribal Government Entities Must be Included in the Planning Process

The PSCC has always conducted open, public meetings with the sole purpose of increasing participation from all interested parties, state, local, tribal, non-governmental entities, etc. This process has been constant since the inception of the PSCC and will continue. In addition to the regularly scheduled meetings, additional forums have been conducted in the state to discuss this SCIP. Meetings are announced via an email distribution list of over 400 names, representing every facet of the public safety community of interest, each meeting was publicized, and all were encouraged to participate to ensure their needs were identified and included in the plan. In addition to the 400 emails sent by the PSCC, an additional 600 emails are sent to tribal representatives in Arizona ensuring that they are aware of meetings of the PSCC, SIEC and this planning process. Tribal governments also learn more about this process by attending regular meetings that are conducted as part of the PSCC outreach. (During November and December 2007, three additional meetings will be held to bring the actions of the PSCC and this plan to the tribal entities.)

All entities will be encouraged to continue their participation. In the present PSIC grant process, the state has developed workbooks and guidelines for local, tribal, and non-governmental entities to apply these funds in the advancement of the SCIP initiatives. These requests from non-state entities will be evaluated by the RACs, providing further opportunity for local and tribal participation.

Further, all of the initiatives have opportunities for all state, local, tribal, non-governmental, and federal entities to participate. As the true value of AIRS is being shared with local, tribal, and federal agencies, it is anticipated that these entities will want to further their participation in AIRS by including bases stations in their dispatch centers. The microwave enhancement also permits locals to be interconnected for improved interoperability. The expansion of regional systems operated by local jurisdictions will provide larger footprints or improved capacity for emergency activities. The long-term statewide 700 MHz system encourages participation by non-state agencies and provides the ability for existing local or federal systems to link into it for higher levels of interoperability. The high-level network interconnection will permit the

expansion of interoperable system areas by creating the system-of-systems concept of system development. The Strategic Technology Reserves will be located throughout the state with the ability to be deployed to local or tribal agencies as needed.

Arizona is unusual from most other states in the vast open spaces between areas of population. Assistance for disaster operations may take four to eight hours of response time to be transported from other jurisdictions. Local and tribal assistance will usually be the first available means. It is imperative that local and tribal, as well as federal, state, and non-governmental, entities all have interoperable communications, and this will be accomplished by all agencies participating in the initiatives of this SCIP.

6.1.9. NGO Needs Included In This Planning Process

As stated in Section 6.1.8, the needs of NGOs were solicited and included in this planning process. NGOs are included in the over 400 email addresses to which this SCIP has been sent. NGO representatives serve on the PSCC and SIEC and these representatives have taken an active role in creating this plan through offering of information, review of draft copies, recommending additions, deletions, corrections, and participating in planning.

7. FUNDING

7.1. BUDGET DETERMINATION

The statewide budget for the Arizona Interoperable Communications Plan has not been fully developed as the state is still in the planning phase for this project. Once designed the system budget will be developed and published.

7.2. COMMITTED FUNDS

Since the inception of the PSCC, funds have been sought to establish interoperability in Arizona. The state uses a combination of funding mechanisms to ensure that the momentum of this effort is ongoing.

In 2004, the first allocation of $3 million was made to the PSCC to start the work necessary to form the framework of an interoperability system and conceptual design. Because of this work, the PSCC will be launching a state-of-the-art 700/800 MHz fully interoperable, standards-based radio Demonstration Project that will demonstrate true a system-of-systems concept linking the state, PRWN and YRCS systems enabling system-wide access to communications during the second quarter of 2008. Much of the original funding allocation will be used to launch this project.

Since that time, the largest investment made by the state, using a combination of State General Funds, State Highway Funds, and State Game and Fish Funds has been made on the statewide microwave system. These funds are all non-lapsing and account for an investment of $4.599 million. To augment the state's investment in the microwave system, additional grant funds will also used. The state anticipates using grants received in 2008 from the Department of Homeland Security ($774,889), the Law Enforcement Terrorism Prevention Program ($498,031), and funds from the Tucson UASI ($424,639) totaling an additional $ 1,297,559.

In 2008, additional investments will be made by the state using both General Funds and Anti-Racketing Funds. The state will be investing an additional $1,383,300 in lapsing funds to complete the statewide interoperability design. An additional $2.2 million dollars from the (non-lapsing) Anti-Racketing Fund will be used to fund the 700 MHz Demonstration Project.

7.3. COMPREHENSIVE FUNDING STRATEGY

As stated in Section 7.1, the statewide system's budget has not been fully developed, and as such, a comprehensive funding strategy cannot yet be determined. The PSCC is charged with developing the funding strategy when appropriate

A plan for creating a comprehensive funding strategy is somewhat dependent upon the total cost of ownership of the statewide radio system. Once that is determined, a more detailed analysis will be conducted. The initial plan calls for the creation of a cost model to be created

for the PSCC. This costing model will include a business case that can be shared with others who are interested in participating in this new system. The plan will leverage the investments made thus far by the state, including those made with federal grants. At that time, the PSCC will review a series of options that will be available for funding this project. These will include but not be limited to the following:

- General funds from state government
- A mixture of state and federal funding (each leveraged against the other)
- Certificates of Participation (COP) to be used as collateral to a lending institution
- Public and private partnerships
- Lease to purchase agreement
- Any combination of the mechanisms described above.

Once the long-term budget is approved, it will be reviewed by the governing body (at this time the PSCC) on a regular basis. Additionally, as this system will serve a series of stakeholders, this review will be public to ensure that funds are spent according to approved rules and regulations. An annual budget will be prepared and vetted to the stakeholders, who will approve the budget before it goes to the funding authority for approval.

7.3.1. Planned Costs

The planned costs are currently under development (as outlined in Sections 7.1 and 7.3).

7.3.2. Identifying Funding Sources

The PSCC does not actively solicit grant funding for its projects. Projects are typically funded either with State General Funds or by the use of grant funds, when the PSCC becomes aware of such an option. Once the statewide project's funding requirements are known, additional emphasis will be placed on this activity.

7.4. Funding for Strategic Initiatives

Funding sources have been identified for several strategic initiatives. These initiatives include the three phases of upgrading of the state microwave system, the Demonstration Project for the statewide interoperability plan and funding for additional AIRS components. These initiatives will be funded in part with state general funds and federal grants.

7.5. Source of Funds, Short-term vs. long-term

For purposes of this SCIP, short-term shall refer to initiatives from 1-3 years, while middle-term initiatives will refer to those that are between 3-5 years, and long-term shall refer to projects that are 5 years and beyond. To date, the only long-term funded project is the State Microwave Backbone Infrastructure upgrade project. The funding sources for this project are a combination of state and federal monies. As the 700 MHz radio project moves closer to

determining actual costs, it is clear that there will be a marked difference between the funding mechanisms for short- and long-term projects. As long-term projects span multiple funding cycles, their funding streams must account for that issue, and as the statewide radio project will include multiple jurisdictions, it is likely that user fees will supplement the state's level of funding.

7.6. Grant Applications

The state has applied for Homeland Security grants to foster interoperable communications. It is anticipated the state will continue to do so.

7.7. Funding for Communications Equipment Purchases, Maintenance, and Upgrades

This PSIC grant includes investment justifications for communications equipment, maintenance, and upgrades. It is anticipated that the technology purchased with these funds will replace older equipment that has outlived its normal replacement cycle, or for equipment that could be used with legacy equipment to augment interoperability. This equipment is necessary to promote interoperable communications in the state of Arizona.

7.8. Reimbursements for Emergencies

All state and local entities are reimbursed for expenditures they make while assisting others during a mutual aid deployment. This reimbursement would include, for example, a county deploying a communications van to another county. The responding jurisdiction is entitled to reimbursement for expenses including (and not limited to) those for the vehicle, the driver, the technician, repair to damages sustained during deployment, and any other reasonable expenses because of the deployment.

7.9. Funding for the Statewide Coordinator

The state of Arizona, understanding the need for a statewide coordinator for interoperable communications, has funded this position for the last seven years. It is likely that the funding for this position will be part of the funding package requested by the state.

7.10. Expenses paid to the Commission

Expenses incurred by the PSCC are reimbursable pursuant to the enabling legislation creating this group. Expenses for the SIEC are not reimbursable.

7.11. Expenses for Training and Evaluation

If training is a DHS requirement, all expenses for that training will be paid by DHS. Other training is the responsibility of the governmental agency requesting the training.

7.12. Ensuring PSIC-Funded Equipment Complies with the State Plan

The State Administrative Agency (SAA) in Arizona is the Arizona Department of Homeland Security (AZDOHS). The AZDOHS has already solicited input from state, local, and tribal public safety agencies and authorized nongovernmental organizations via briefings to the Arizona Homeland Security Regional Advisory Councils (RAC). The Arizona Pubic Safety Communications Commission has developed the key goals and components of the Statewide Plan and the Executive Director of the Commission has presented an overview of the Plan's key features at meetings in each of the State's five regions.

In addition, the AZDOHS has sent emails to public safety stakeholders, posted grant solicitation information on their website, and facilitated teleconferences with appropriate entities to discuss the PSIC grant requirements. AZDOHS has made it very clear that any grant applications must adhere to and be in support of the SCIP and the state's interoperability requirements.

To solicit applications, the AZDOHS used an application format that local jurisdictions and state agencies are familiar with and have previously used in the Homeland Security Grant Program application process. This tool (Application Workbook) serves a similar function as the Investment Justification template.

The Application Workbook was developed with information specific to Arizona's Statewide Plan based on federal PSIC guidance. The Workbook submissions gave AZDOHS information necessary to determine how eligible jurisdictions are able to support the Statewide Plan and what mechanisms are necessary to ensure interoperability within their areas and throughout the State. The Workbook also included provisions to ensure that applicants were familiar with the 20 percent matching requirement.

As part of the application process, AZDOHS will also request, in writing, applicable Memorandum of Understandings for state management of local funds.

Workbooks were received, by the AZDOHS, who worked with the lead agency (Department of Public Safety/Public Safety Communications Commission) responsible for the Statewide Communications Interoperability Plan on a review of the submitted Workbooks. This review by the PSCC and the Interoperability Working Group will assisted the AZDOHS in determining the critical connection of Workbook applications to required elements in the Statewide Plan based on federal guidance for the PSIC project.

The RACs reviewed the Application Workbooks and made recommendations to the AZDOHS Director pursuant to A.R.S § 41-4258. A list of the recommended projects will also be forwarded to the State Homeland Security Coordinating Council for comment.

Once the reviews and recommendations were completed, the AZDOHS Director made the final award decisions and the Investment Justifications were completed.

The Application Workbooks information was synthesized into the State's Investment Justification narratives. Any new MOUs obtained for specific project(s) were also included in the Investment Justifications. The Investment Justifications and this SCIP was submitted to the Department of Homeland Security on November 30, 2007.

Once the grant applications (Investment Justifications) are approved, equipment will then be purchased by the local jurisdiction. These purchases will be reimbursed only if the committee who approved the equipment is satisfied that what was ordered meets the criteria of what was proposed in the Workbooks. Purchases made outside of the provisions of this process will not be reimbursed.

7.12.1. Ongoing Funding of PSIC-Funded Equipment

All ongoing funding for both operation and maintenance or upgrades of equipment purchased with PSIC funds will be the responsibility of the entity receiving the equipment.

8. CLOSE

The Arizona SCIP provides an overview of the state of Arizona, its demographics and geographic features. It also describes the state's emergency response community, current radio systems, current operations standards and protocols, and its overall plan for the future. It is the state's goal to provide a DHS/OEC "standards-based common infrastructure" level of interoperability to all public safety agencies and entities by the year 2013, as well as a means for providing interoperability for those local, county, tribal, and non-governmental entities not joining the common infrastructure. This new system will provide seamless compatibility with every regional or metropolitan infrastructure for additional interoperability

8.1. NEXT STEPS

The PSCC and SIEC will oversee the establishment of a governance board for the new interoperability system to institute policies, SOPs, and a revenue stream to fund its continued operation and eventual replacement. All measures taken, such as Demonstration Projects, the AIRS network, microwave upgrade, and current procedures based on NIMS and other protocols, will move the state toward this goal.

The state will continue to apply for grants and legislative funding with the sole purpose of achieving the "standards-based common infrastructure" level of interoperability required to safeguard the lives and property of the citizens of Arizona. The AIRS network is being expanded and its coverage will be improved. The state microwave network will be upgraded from analog to digital, link by link. Dispatch centers will be upgraded to accommodate the statewide system, AIRS dispatching, and control. The 700 MHz sites will be installed. The statewide system will be brought on line under the care and management of a governing board, under the direction of the PSCC.

APPENDIX A - ACRONYM GLOSSARY

Acronym	Full Term
ACJC	Arizona Criminal Justice Commission
ADEM	Arizona Department of Emergency Management (referred to as DEMA)
ADOHS	Arizona Department of Homeland Security
ADOT	Arizona Department of Transportation
AFL	Arena Football League
AFOG	Arizona Field Operations Guide
AIRS	Arizona Interagency Radio System
AOHS	Arizona Department of Homeland Security
APCO	Association of Public-Safety Communications Officials
APS	Arizona Public Service
ASU	Arizona State University
BLM	Bureau of Land Management/Department of the Interior
CAP	Central Arizona Project
CASM	Communication Assets Survey and Mapping
CBRN	Chemical, Biological, Radiological and Nuclear
COML	Communications Unit Leader
COMT	Communications Unit Technician
DEMA	Department of Emergency and Military Affairs
DHS/OEC	Department of Homeland Security/Office of Emergency Communications
DOC	Department of Corrections
DPS	Department of Public Safety
EMAC	Emergency Management Compact
EMS	Emergency Medical Services
EMSCOM	Emergency Medical Services Communications
EOC	Emergency Operations Center
F	Fahrenheit (in degrees)

Acronym	Full Term
FBR	Fred Billings Ramsey Group, Inc.
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
GITA	Government Information Technology Agency
HazMat	Hazardous Materials
HSPD	Homeland Security Presidential Directive
IARS	Interoperable Arizona Radio System (Predecessor to AIRS)
IC	Incident Commander
ICE	Immigration and Customs Enforcement
ICS	Incident Command System
ICTAP	Interoperable Communications Technical Assistance Program
IGA	Intergovernmental Agreement
ISSI	Inter-Sub-system Interface
ITAC	Information Technology Authorizing Committee
JDRF	Juvenile Diabetes Research Foundation
kHz	Kilohertz
MAA	Mutual Aid Agreements
MACS	Multi-Agency Coordination System
MCC	Multi-Agency Coordination Center
MHz	Megahertz
MLB	Major League Baseball
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MS	Multiple Sclerosis
NAFTA	North American Free Trade Agreement
NASCAR	National Association for Stock Car Auto Racing
NAU	Northern Arizona University
NBA	National Basketball Association

Acronym	Full Term
NFL	National Football League
NGO	Non-Governmental Organizations
NHL	National Hockey League
NIMS	National Incident Management System
NOAA	National Oceanic and Atmosphere Administration
NPSPAC	National Public Safety Planning Advisory Committee
NRP	National Response Plan
NWCG	National Wildfire Coordinating Group
PFAC	Police and Fire Advisory Committee
PIO	Public Information Officer
POC	Point of Contact
PSAP	Public Safety Answering Point
PSCC	Public Safety Communications Commission (originally “Committee”)
PSIC	Public Safety Interoperable Communications
PSWN	Public Safety Wireless Network
RAC	Regional Advisory Council
RACES	Radio Amateur Communications Emergency Services
RCC	RCC Consultants
RPC	Regional Planning Committee
SAA	State Administrative Agency
SAIC	Science Applications International Corporation
SCIP	(Arizona) Statewide Communications Interoperability Plan
SIEC	Statewide Interoperability Executive Committee
SOP	Standard Operating Procedure
SR-NN	State Roadways (State Route *NN*)
STR	Strategic Technology Reserve
SWAT	Special Weapons and Tactics
TIC Plan	Tactical Interoperability Communications Plan

Acronym	Full Term
TOPOFF	Top Officials exercise intended to test the nation's readiness to deal with large-scale terrorist attacks.
TSA	Transportation Security Administration
UASI	Urban Area Security Initiative
UHF	Ultra High Frequency
US-NN	Federal roadways (U.S. Route *NN*)
VHF	Very High Frequency
VOAD	Voluntary Organizations Active in Disaster
WAIS	Wide Area Information Server
WMD	Weapons of Mass Destruction
WNBA	Women's National Basketball Association
YMCA	Young Men's Christian Association
YRCS	Yuma Regional Communications System

APPENDIX B - COMMON EXPRESSIONS AND TERMS

Term	Definition
CANAMEX	In the State of Arizona, the CANAMEX Corridor shall generally follow-- (i) I-19 from Nogales to Tucson; (ii) I-10 from Tucson to Phoenix; and (iii) United States Route 93 in the vicinity of Phoenix to the Nevada Border
Citizen Corps	Network of volunteer efforts to prepare local communities to effectively prevent and respond to the threats of terrorism, crime, or any kind of disaster
ConOps	Concept of Operations, this is a report that can be found at http://www.azdps.gov/pscc/PSCCFinalConOps102605.pdf
Continuum	SAFECOM Communications Interoperability Continuum
CONV	Convention radio system – fixed frequencies
Incident	An event of occurrence requiring the participation and coordination of more than one public safety first responder agency requiring the services of more than one agency
Interoperability	The ability of public safety officials to share information via voice and data signals on demand, in real time, when needed, and as authorized
Narrowband	Refers to a situation in radio communications where the bandwidth of the message does not significantly exceed the channel's coherence bandwidth. It is a common misconception that narrowband refers to a channel which occupies only a "small" amount of space on the radio spectrum
P-25	Project-25 is an industry suite of standards pertaining to modern digital radio systems to promote interoperability
SAFECOM	Communications program of the Department of Homeland Security's Office for Interoperability and Compatibility that, with its Federal partners, provides research, development, testing and evaluation, guidance, tools, and templates on communications-related issues to local, tribal, state, and Federal emergency response agencies
Trunk	Trunked radio system – frequency assignment is chosen through computer programs to maximize available capacity. Groups of users are given a logical “talkgroup” to share for their communications, rather than a dedicated radio frequency

Term	Definition
Wave 4	Refers to the sequence number in which a region can begin a three-month voluntary negotiation period to migrate from radio frequencies that the Federal Communications Commission (FCC) will transfer to other users. Negotiations are with Nextel Communications, the Transition Administrator (representing the FCC) and the 800 MHz license holder

APPENDIX C - EXECUTIVE ORDER 2005-08

Executive Order 2005-08

DESIGNATION OF THE NATIONAL INCIDENT MANAGEMENT SYSTEM (NIMS) AS THE BASIS FOR ALL INCIDENT MANAGEMENT IN ARIZONA

WHEREAS, in Homeland Security Presidential Directive, the President of the United States directed the Secretary of the Department of Homeland Security to develop and administer a National Incident Management System (NIMS) that would provide a consistent nationwide approach for Federal, State, local, and tribal governments to work together more effectively and efficiently to prevent, prepare for, respond to, and recover from domestic incidents of any cause, size, or complexity; and

WHEREAS, it is necessary and desirable that all Federal, State, local, and tribal emergency agencies and personnel coordinate their efforts to effectively and efficiently provide the highest levels of incident management; and

WHEREAS, to facilitate the desired levels of incident management, it is critical that Federal, State, local, and tribal organizations use standardized terminology, standardized organizational structures, interoperable communications, consolidated action plans, unified command structures, uniform personnel qualification standards, uniform standards for planning, training, and exercises, comprehensive resource management, and designated incident facilities during emergencies or disasters; and

WHEREAS, the NIMS standardized procedures for managing personnel, communications, facilities and resources will improve the State's opportunities for federal funding to enhance local and state agency readiness, maintain first responder safety, and streamline incident management processes; and

WHEREAS, federal guidelines for homeland security grant funding for federal fiscal year 2006 and beyond require NIMS compliance as a condition of eligibility; and

WHEREAS, the National Commission on Terrorist Attacks (9-11 Commission) recommended adoption of a standardized Incident Command System;

NOW, THEREFORE, I, Janet Napolitano, Governor of the State of Arizona, by virtue of the authority vested in me by the Constitution and laws of this State, hereby order and direct as follows:

1. The National Incident Management System (NIMS) shall be the State standard for incident management.

2. The Arizona Office of Homeland Security (AOHS) and the Arizona Division of Emergency Management (ADEM) shall lead NIMS implementation throughout Arizona.

3. AOHS shall be charged with:

    a. Incorporating NIMS into existing statewide training programs and exercises;

b. Seeking federal preparedness funding sufficient to support NIMS implementation;
c. Incorporating NIMS into emergency operations plans;
d. Promoting intrastate mutual aid agreements;
e. Providing and coordinating technical assistance to local entities regarding NIMS to ensure statewide compliance;
f. Institutionalizing the use of NIMS; and
g. Leading the effort to achieve statewide NIMS compliance to ensure continued eligibility for federal homeland security grant funds.

IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Great Seal of the State of Arizona.

GOVERNOR

DONE in Phoenix, Arizona this 29th day of March Two Thousand Five and of the Independence of the United States the Two Hundred and Twenty Ninth.

ATTEST:

SECRETARY OF STATE